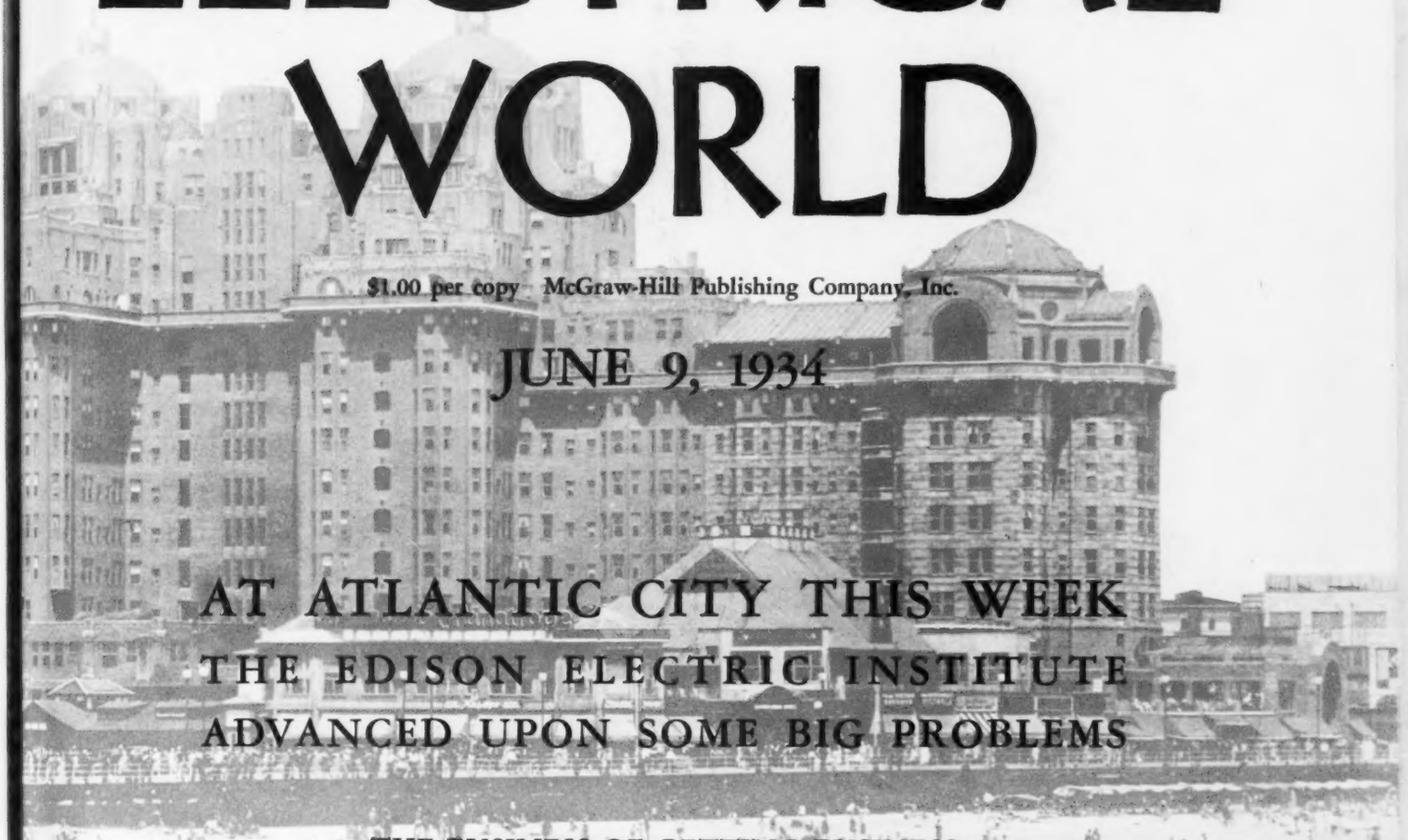
JUN 11 1934

E.E.I. CONVENTION REPORT NUMBER

ELECTRICAL WORLD

$1.00 per copy McGraw-Hill Publishing Company, Inc.

JUNE 9, 1934



AT ATLANTIC CITY THIS WEEK

THE EDISON ELECTRIC INSTITUTE ADVANCED UPON SOME BIG PROBLEMS

THE BUSINESS OF GETTING BUSINESS

Discussed by George E. Whitwell, J. E. Davidson, T. K. Quinn, A. L. Billingsley and M. E. Skinner

WHAT'S AHEAD OF THE POWER COMPANIES?

George B. Cortelyou, J. J. Jackson and B. F. Weadock gave their viewpoints

HOW CAN ENGINEERING BEST MEET PRESENT TRENDS?

Philip Sporn and J. L. Hecht told how

PRICE LEVELS, RATES AND RURAL SERVICE

F. A. Newton and P. H. Powers reviewed them

This issue of *Electrical World* brings to its industry the second annual meeting of E.E.I.—news, addresses and discussions—oriented editorially both for stay-at-homes and those who attended. On the press as the convention closed. The cumulative results of this meeting will be felt industry-wide throughout the months to come. Which is just another manner of saying that E.E.I. and the art of energy generation and utilization are on their way once more to a new goal of industry accomplishment.

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Electrical World articles are indexed in Industrial Arts and Engineering Indexes, available in public libraries.

VOLUME 103 . . . NUMBER 23

Contents Copyrighted, 1934, by McGraw-Hill Publishing Company, Inc.

ELECTRICAL WORLD—Published weekly, price 25 cents a copy. Subscription rates—United States, Mexico and Central and South American countries $5 a year. Canada, including duty, $7.50 a year. All other countries, $9, or 36 shillings, a year. Entered as second-class matter January 20, 1907, at Post Office at New York, N. Y., under the Act of March 3, 1879. Printed in U. S. A.

Branch Offices: 520 North Michigan Ave. Chicago; 883 Mission St., San Francisco; Aldwych House, Aldwych, London, W.C. 2; Washington; Philadelphia; Cleveland; Detroit; St. Louis; Boston; Greenville, S. C. Printed by The Schweinler Press, N. Y.

McGRAW-HILL PUBLISHING COMPANY, INC.
330 West 42d Street, New York, N. Y.

NRA U.S. CODE GRAPHIC ARTS INDUSTRY 1934 REGISTRATION NO. 31-1568

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June 9, 1934

L. W. W. MORROW, *Editor*

E.E.I. Holds to a Practical View

PRACTICAL aspects of utility operations dominated the meeting of the Edison Electric Institute at Atlantic City this week. Rates and prices for service, engineering to get dollar savings and commercial plans and suggestions to get more business were topics treated completely and constructively. Many new ideas and suggestions were presented that should be applied on all properties. In this realm of engineering and sales the meeting was significant and valuable. It typified and aided the present utility program for economics, for business building and for avoiding the beaten track to arrive at more prosperous levels.

In addition to the formal program, however, the 800 utility men in attendance gained great value from meeting together once again. The representation from all sections was good, and the informal reunions and discussions permitted the interchange of ideas that clarified thought and introduced more unity and courage into the industry. The spirit was much better than last year and far more optimism about the future existed because of many encouraging reports.

Papers and discussions on major financial policy and organization problems were not presented aside from the address of President Cortelyou. Federal and municipal competition, the present financial and security situation, taxation, regulation, public relations and other current national problems were not discussed by industry executives and comment was heard at this neglect, particularly as heretofore these topics have dominated industry meetings. Undoubtedly differences of opinion exist as to the policies now applied by the Edison Electric Institute as to its programs, its organization and its detail activities, but it should be remembered that it is still in a stage of growth and development. It is working its way toward what is needed, and at this meeting several constructive changes were authorized.

The light and power industry must have an industry-wide organization, because it must take action as an industry at times even though a great majority of its problems are local. It should have a service organization that permits the interchange of ideas and practices and helps to do the educational work to develop better operating principles and personnel. The Edison Electric Institute will survive or fail to the degree that it meets the industry's needs in these respects.

THESE are "jittery" times in the utility industry as in all industry, and, strangely but truly, this often causes disintegration rather than union. Human beings are illogical and emotional under pressure. Sane thought and courageous action must be taken to make the Edison Electric Institute stronger and more representative of the industry because the industry needs and must have such an organization. The utility code is on the horizon and will aid this development.

The program reflected some of the existing timidity and uncertainty that exist in some quarters and failed to bridge many of the informational gaps that exist between the top rank and the men on the firing line. But this criticism is made as a constructive suggestion to add value to future meetings only and not to detract from the very worth-while reunion held this week. The future of the industry, as well as that of the Edison Electric Institute, is bright with promise if all will give constructive aid and counsel and act with courage to realize upon the opportunities instead of inertly bewailing about the burdens. It was the growth of this constructive attitude that stood out in the Atlantic City meeting.

Edison Electric Institute Plans

At its second annual meeting, held in Atlantic City this week, the Edison Electric Institute confined most deliberations at open sessions to commercial and engineering phases of utility enterprise. How energy markets could best be expanded, how progressive engineering could be made to pay its way were the dominant considerations.

"A REASSURING view of the future of the electric utilities is hardly possible that does not envisage an easing of the tax burden," President George B. Cortelyou told the members of the Edison Electric Institute who met in Atlantic City this week. "Taxes and rates cannot go in opposite directions—the one up and the other down—indefinitely. The only hope of justifiable rate reductions lies in the development of new and enlarged uses for electricity, but taxes are now so heavy as to act as a grave deterrent to increased use, if they do not actually cut down the amount of use."

President Cortelyou, reviewing the problems of the industry and looking toward the insistent necessity of meeting those of the future, concluded: "Whatever the obstacles in our path—and they are indeed serious—we shall go forward with resolute determination to make the industry as great in leadership as it is in technical strength, to protect and defend its legal and constitutional rights against unjust aggression, to promote the widest possible use of its service at the least possible cost to every class of consumer, doing our work as well as we know how, striving always for improvement. The outcome we leave to the native good sense and fairness of the American people."

Taxes, Rural Electrification, Progressive Engineering

TAKING his theme from President Cortelyou, John J. Jackson, general counsel for Westinghouse Electric & Manufacturing Company, told the first general session on Tuesday that the rising tide of state and federal levies was but the manifestation of the "creature-state" becoming dominant over the "creator-citizenry." Mr. Jackson, with tangible evidence, showed where and why the governmental revenues so derived are expended and pled for action by industry and public alike to halt the vast movement. It was his contention that "Laws follow, do not precede, public opinion," and that therefore public opinion must be aroused if a reformation of the present trend is to ensue.

First announcement of a co-operative program between the Edison Electric Institute, the National Committee on the Relationship of Electricity to Agriculture and pump manufacturers for the sale within fifteen months of 125,000 electric water system units was made at this meeting. The activity will be under the auspices of the Electric Water Systems Council.

In explaining the plan, Chairman P. H. Powers of the newly formed council and vice-president of the West Penn Power Company, told his audience that there are at least 1,250,000 homes in this country with electric service but without running water, and that this load, which has excellent revenue and service characteristics, could well be pushed.

It is expected that the promotion of water-pumping systems in rural communities will induce parallel development of other applications such as small-scale irrigation, water heating and the more general use of electricity on farms.

That the sale of 125,000 units in fifteen months is an ambitious undertaking may be inferred from the fact that such sales have averaged about 50,000 annually for the past three years.

Progressive engineering pays its way

JARRING the complacency of those few who feel that engineering is standing still, as well as that of those who see no quick dollars-and-cents returns for expenditures made to modernize system facilities, Philip Sporn, vice-president of the American Gas & Electric Company, cited some remarkable facts. Starting with the generating station, he proceeded through transmission and distribution to utilization with an imposing array of data to show what undeviating attention and continual acceptance of newer practices were doing to save money for his organization.

"It has been the experience of the company with which I am connected, and I believe this has been the experience of progressive companies in general," said Mr. Sporn, "that progressive engineering, going hand in hand with progressive management, can, even in times of stress, devise ways and means of effecting operating economies, and

Thomas N. McCarter

to Sell, to Improve Engineering

of cutting costs of such capital expenditures as have to be made, and that these economies will more than justify the cost of such engineering. In other words, progressive engineering can be made to pay its way."

For example, service rebuilding on residential jobs costs on an average $6. Where an energy diversion factor of 16 per cent is encountered the capital expended in rebuilding a whole section will be returned in 2½ years.

Mr. Sporn cited 25 separate and distinct activities of this nature which he has found to be quickly self-supporting.

In the discussion of Mr. Sporn's paper by J. Allen Johnson, chief engineer of Buffalo, Niagara & Eastern Power Corporation, and N. E. Funk, vice-president in charge of engineering Philadelphia Electric Company, it was apparent that the opinion of competent engineers was swinging toward an early resumption of engineering activities which have been permitted to decline on many properties. Thus the pendulum swings the other way once more.

Get Business, Face Competition, Better Light—Better Sight

PLEADING for a more open-minded approach on the part of the men of the industry to the current commercial problems in developing home and industry markets, George E. Whitwell, vice-president Philadelphia Electric Company, opened the second general session with an address on "The Business of Getting Business." Too long, contended Mr. Whitwell, have we thought in terms of industry-old concepts. Too long have we thought of increased sales as being pre-eminently desirable for power company and appliance maker and too little have we thought in terms of the personal benefits to be gained and enjoyed by the consumer through increased energy use.

"And so," reported Mr. Whitwell, "your sales committee has tried this last year to sell the value of electric service to the customer, hoping that you will provide for your sales departments more and more sinews of war. The Better Light—Better Sight Campaign, under M. E. Skinner's able guidance, developed rapidly because of the fact that its fundamental appeal was universal better sight. A continuous, national effort in selling the value of light in terms of eyesight conservation—a simple, elementary proposition, if you will—has sold for electric utilities many hundreds of thousands of kilowatt-hours during the last year.

"The subcommittee on air conditioning, under C. E. Michel's leadership, has been collecting and correlating data of interest to this newer branch of our activities. Much useful information has been gathered concerning the uses of air-conditioning as well as the factual data on specific applications. They have given special attention to the study of sales and promotion methods, making recommendations for increasing their air-conditioning load on utility lines.

"For this year we have under way a National Electric Cookery Program with the slogan, "Electric Table Service Saves." This activity is part of the work of the residential subcommittee, headed by D. M. DeBard. Based on the same simple underlying principles that have characterized the Better Light—Better Sight campaigns, this activity turns the spotlight on the so-called smaller appliances."

How soon the all-electric home?

URGING earnestly that the present interest in ultra-modern homes and the implied necessity in connection with them of making such structures all-electric in their services, conveniences and comforts be fully capitalized upon, Allen L. Billingsley of Fuller & Smith & Ross, Inc., took up the load promotion theme where Mr. Whitwell left off.

"We must," said Mr. Billingsley, "promote always, this year, next year and the years after, the Home of Tomorrow. When tomorrow comes we must be there with still newer ideas, still bolder electrical developments, for the next Home of Tomorrow. This means broad-scale educational work on all the various sections of the building trades, it means having men with pioneering minds in our organization who can originate ideas, aid with plans, draw specifications, and furnish the in-

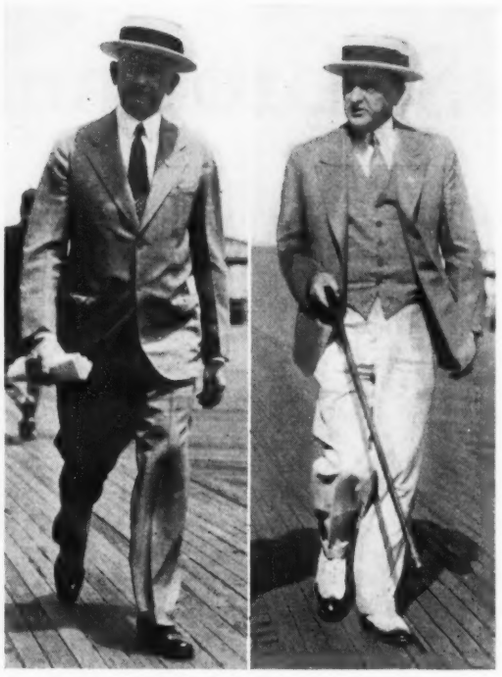
spiration for the progressive planning of true electrical homes."

Can people afford to buy?

Taking a highly realistic view of the commercial situation, T. K. Quinn of the General Electric Company told the meeting just why in his opinion sales of electrical appliances lagged. He recognized as the prime retarding element the high cost of major energy-using units and offered the suggestion that installment sales be pushed on a basis which would permit small monthly payments (to be collected by the utility) so that appliance sales volumes might be increased sufficiently to bring resultant reductions in manufacturing costs.

To this thinking J. E. Davidson, president Nebraska Power Company, added an earnest plea for whole-hearted co-operation with dealers and such co-ordination of local sales efforts as would offer direct aid to load-building programs.

It was at this meeting that Mr. Davidson was presented with an illuminated glass globe in appreciation of his sustained and highly successful efforts while heading the Electric Refrigeration Bureau's activities.



A. C. Marshall W. Kelly

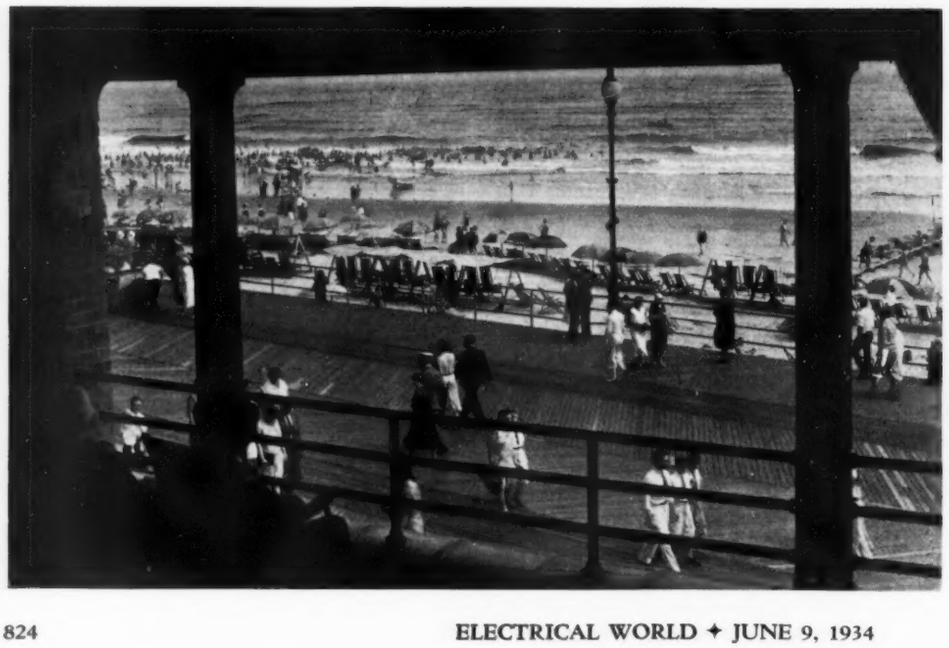
"Better Light—Better Sight" Continues

FULLY backed on a national scale by utility, manufacturer, health, school and related organizations, the Better Light—Better Sight campaign, so successfully pushed in the past year, will be continued on a markedly advanced scale in the months to come. In announcing the augmented movement M. E. Skinner of the Niagara Hudson Power Corporation told how advertising, education, sales and revenues could progress together.

The results of the 1933-34 campaign were extraordinarily good and highly gratifying to the great majority of participants. So much so, that a large number of utility executives and officials of other important allied groups have emphasized the advisability, the necessity, the advantages of not only continuing a lighting activity but to broaden its scope to cover all phases of the important subject—eyesight conservation.

The optical industry through its association, the Better Vision Institute, has for several years been conducting an extensive educational activity with the public on eyesight conservation featuring the necessity of frequent eye examination and correction for good vision. Through the estimated 22,600 establishments with consumer contact the story of eyesight conservation is constantly being told.

The paint industry, through its Clean-Up and Paint-Up Campaign Bureau, has for 22 years been telling the public of the advantages of bright walls and ceilings. More recently the benefits of proper reflecting surfaces have been a keynote in its promotion as a great contribution toward better vision and eyesight conservation.



The National Safety Council has long advocated the use of better-vision devices and facilities as preventives of risks and accidents that result unnecessarily in thousands of deaths annually.

The National Society for Prevention of Blindness, a great philanthropic organization, has since its inception been pleading the cause of eyesight conservation with better vision facilities, particularly among parent-teacher associations, school boards and child welfare groups.

The electrical industry, realizing the great humanitarianism of eyesight conservation and the important part that good lighting contributes to its progress, has adopted

eyesight conservation as its theme and objective in the promotion of adequate and proper lighting for better vision.

These and several more important and powerful associations and groups, having a common objective — eyesight conservation—will band together through the National Better Light-Better Sight Bureau, which is composed of representatives from each co-operating industry and group.

J. E. Davidson

Prices, Rates, Prize Awards, Elections

WITH fact piled upon fact and one comparison side by side with many another, Frank A. Newton of Commonwealth Southern Corporation demonstrated at the third general session just how markedly general price levels have differed in the past few years from the trend in utility rates for electrical energy. By every test the rate policy of the industry was shown to have been continuously and most progressively fair to consumers, even to the point of complete conflict at times with other price-level trends. The discussion was to a large measure a continuation of the theme developed by Mr. Newton at the first annual meeting of the Edison Electric Institute in Chicago last year.

It was the plea of J. L. Hecht of the Public Service Company of Northern Illinois that operating functions could well be planned and executed for better adjustment to present trends on many properties. Mr. Hecht cited examples of things done by his own organization in furtherance of this viewpoint. Even in this discussion of the improved handling of reports, adjustment of line-gang sizes, reformation of supervisory policies and similar matters did the newly rearoused commercial sense of the industry make itself evident, for Mr. Hecht said: "When action is taken toward expanding sales efforts at a time when most other functions are being curtailed, care must be taken to avoid demoralizing the organization, for in the very nature of things at a period such as we have been going through employees are suffering along with other citizens and the morale is at a relatively low ebb. This problem, it is felt, can best be met through efforts tending to create sales consciousness on the part of the entire organization."

Although the impending Code of Fair Competition for the electric light and power industry was an active topic of conversation at the convention, it had no place in the formal program. At the concluding session, however, President Cortelyou announced that the association had approved a proposed code now waiting for the President's signature. Louis H. Egan, president of the Union Electric Light & Power Company of St. Louis, was introduced as the man selected to head the Code Authority. Mr. Egan in brief informal remarks stated that it was expected that the Code Authority for the power industry would require a budget of $500,000, but that he could give no assurance of any benefits from the expenditure.

Coffin Award to Hartford

TO THE Hartford Electric Light Company went the annual award for 1933 of the Charles A. Coffin Foundation, established by the General Electric Company. Presentation of the award was made to Samuel Ferguson, president of the company.

The record of the Hartford Electric Light Company for 1933, upon which the award was based, involved numerous unusual practices. In a depression year this company reduced rates to customers, at the same time improving the quality of its service; maintained its full force of employees at the 1929 level without reductions in pay; paid full dividends to its stockholders, setting aside a moderate surplus, but larger than the previous year, and maintained a city-wide good will with its public.

Conspicuous in the methods by which this good will was fostered was the company's "credit certificate" plan, under which customers who were unable to pay their electric service bills were permitted to sign a form certifying that they would pay the bills as soon as financially able to do so. Reductions in rates during the year were made possible by using as a cushion the "customer dividend" not paid in 1933.

In other fields the company was also regarded by the award committee as extremely progressive. It introduced a plan for promoting electric cooking through a year's free trial of electric ranges, preceded by an offer of 500 ranges at a weekly rental. It sponsored promotional electric rates, the underlying principle of which was explained by its president to meetings of customers. It promoted the all-electric home idea, with the aid

CHARLES A. COFFIN MEDAL
FOR DISTINGUISHED CONTRIBUTION
TO THE DEVELOPMENT OF ELECTRIC
LIGHT AND POWER FOR THE CONVE
NIENCE OF THE PUBLIC AND THE
BENEFIT OF THE INDUSTRY

of the electric kitchen exhibit of the General Electric Company, until at the end of the year there were 750 all-electric homes in the company's territory. Similar co-operative progressive activities were applied to the rural districts in the farm-electrification movement.

As factors contributing, on the technical and engineering side, to its achievements, there were listed sixteen pioneer accomplishments in which the company led the electric utility industry of the country.

McCarter Elected President

IT WAS at this meeting that the following elections were announced:

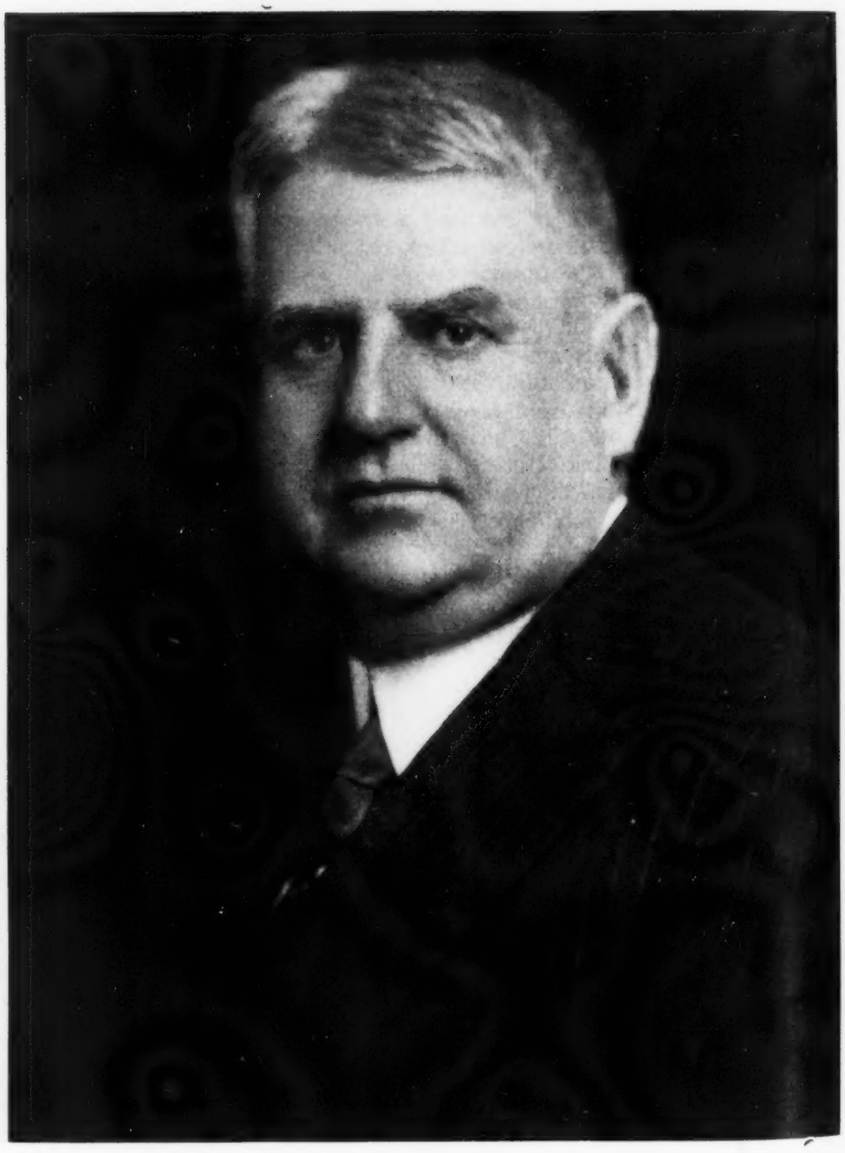
President, Thomas N. McCarter, President Public Service Electric & Gas Company. Vice-Presidents, W. J. Hagenah, Vice-President Standard Gas & Electric Company; Paul M. Downing, Vice-President Pacific Gas & Electric Company; A. H. Kehoe, Vice-President New York Edison Company; J. G. Holtzclaw, President Virginia Electric & Power Company. Vice-President and Managing Director, Bernard F. Weadock. Assistant Managing Director, H. S. Bennion. Treasurer, Edward Reynolds, Jr. Acting Secretary, Mae B. Woods.

The following were elected as members of the Board of Trustees of the Institute for a term of three years: William Chamberlain, United Light & Power Company; Floyd L. Carlisle, Niagara Hudson Power Corporation; Alex Dow, Detroit Edison Company; George N. Tidd, American Gas & Electric Company; John E. Zimmermann, United Gas Improvement Company; Philip G. Gossler, Columbia Gas & Electric Company; Frank W. Smith, New York Edison Company; W. H. Taylor, Philadelphia Electric Company; Louis H. Egan, Union Gas & Electric Company.

New President of the Institute

Thomas N. McCarter

President
Public Service Corporation of
New Jersey



To Mr. McCarter's capable hands has been passed the burden which George B. Cortelyou, first president of the institute, has carried so skillfully through two difficult terms of critical electrical industry history.

We Shall Go Forward

To the Atlantic City meeting of the E.E.I. this week President Cortelyou brought a fine balance of perspective and courage. Sorely tried by forces largely beyond their control, the electric light and power companies as personified by their executives and staffs asked "What's ahead?" and "Which way?" Mr. Cortelyou told them, with courage and understanding.

By GEORGE B. CORTELYOU
President Edison Electric Institute and Consolidated Gas Company

THE year that has passed since the Edison Electric Institute held its first annual convention in Chicago will long be remembered in business history. It has been a year marked by sharp increase in demands upon business enterprise; a time of unusual need for taking counsel together and for making information promptly available to the industry.

It has been a year of realizing the objects of this institute, which are the advancement of the art of producing, transmitting and distributing electricity, the making available of information to the industry and the aiding of operating companies to generate and sell electric energy at the lowest possible price commensurate with safe and adequate service, with due regard to the interests of consumer, investor and employee. Had there not been available a well-established organization to provide a ready means for exchanging information and arriving at workable arrangements, it would have been extremely difficult for the industry to meet the demands made upon it.

NRA the outstanding problem

The outstanding development of the past year affecting the industry was the putting into operation of the national industrial recovery act. Although the justification for a code of fair competition in a regulated industry such as the electric light and power industry was not apparent, when the National Recovery Administration requested the institute to co-operate with the government in carrying out its recovery program, the board of trustees decided to prepare such a code. As a first step, when the President's re-employment agreement applicable to all employers was published, a code committee was appointed to negotiate a substituted President's re-employment agreement for this industry. Subsequently, upon further request from the National Recovery Administration, the code committee, assisted by a lawyers' conference, drafted a code for the electric light and power industry. Invitations were sent to all electric light and power companies in the United States to attend an industry conference in St. Louis, Mo., on December 5, 1933, at which the drafted code was submitted for consideration and approved for presentation to the National Recovery Administration.

This conference appointed an industry code committee to carry on the further negotiations with the NRA. Since that time a public hearing and numerous conferences with the NRA staff have been held in the working out of a mutually acceptable code. The development of a code for an important service industry of a highly technical character, operating under a great diversity of conditions and through units greatly differing in size, is necessarily a slow process. The industry and the government could well afford to proceed carefully to develop a satisfactory basis of operations rather than to proceed more rapidly and then find it necessary for one reason or another to retrace their steps.

Compliance with the substituted President's re-employment agreement has added very substantially to the payroll expense of the industry. At the same time the recovery program has increased the cost of supplies, materials and equipment. The effect to date has been a marked increase in the operating expense of companies.

Further, the demands made upon the time of utility executives and their staffs by attendance upon hearings, conferences and meetings, preparation of financial and other statements for the use of official bodies, federal, state and municipal, filling out of elaborate questionnaires and furnishing reports called for in connection with surveys, investigations and inquiries of all kinds, have reached such proportions as to constitute a serious menace to the progress of the industry in its primary function of supplying electric service, and especially to the further development and improvement of the art. And it is an evil that is growing, not abating.

In former years new technical developments and new business methods came along at a rate that sur-

prised the world and kept the public in a constant state of expectation of new and impressive accomplishment. Of course, in the nature of things, as an industry grows older it cannot produce a revolutionary improvement every day, but it must advance or it begins to lose ground, if not actually, at least comparatively with respect to other business, and the good will built up from past achievements quickly evaporates. So with all their present preoccupation, the higher officials of power companies must somehow find time to devote to these practical and pressing problems; it is incumbent upon all public bodies holding official relations to the industry to co-operate in meeting this urgent need.

Taxes paid by electric light and power companies for 1933 increased 15 per cent over the amount paid in the preceding year. They rose from 12 cents on the dollar of consumer revenue in 1932 to 13.5 cents on the dollar for 1933. The amount of taxes for this present year will constitute a still higher percentage of gross revenue than was the case in 1933, because some of the taxes added in 1933 did not become effective until the middle or latter part of the year. Although sales of electricity in 1934 have grown and it is thought that an increase for the entire year of 8 to 10 per cent may reasonably be expected over the kilowatt-hour sales for the previous year, the 1934 increase in taxes and other expenses will take a large share of any increase in revenue.

To the utilities, whose rates cannot readily be advanced to meet increased expenses, taxes may be and in many instances are a crushing burden. Taxes and rates cannot go in opposite directions—the one up and the other down—indefinitely. The only hope of justifiable rate reductions lies in the development of new and enlarged use for electricity, but taxes are now so heavy as to act as a grave deterrent to increased use if they do not actually cut down the amount of use.

A reassuring view of the future of the electric utilities is hardly possible that does not envisage an easing of the tax burden, certainly to the extent that it is discriminatory.

One of the contributions of the electric utilities to the return of prosperity has been the reduction in the price of industrial power. This has been reduced to the lowest point since the war year of 1917. At the present time the average price for this class of power is 12 per cent below that of last year, 6 per cent below that for 1929 and 13 per cent below the average price for 1926.

Charges of excessive rates cannot be substantiated

IN THESE simple but significant facts we have a conclusive refutation of the charge of generally excessive rates—a charge that is not made by consumers as a class, but by those who would use the consumer merely as a stalking-horse. Rates and service have very little to do with the present agitation against the utilities. Rates are lower and service better than at any previous time in our history. There is nothing the consumer buys for which he pays so little and receives so much, and he is continually receiving more and paying less, because rates have been declining steadily over a period of years, including even the boom years 1927-1929. Radicals and politicians of a certain type labor to create the impression that what is holding back prosperity is high rates for electricity. Ostensibly, to enlist consumer support, they demand lower rates; actually, they seek the socialization of the industry. The primary object of many of them is not the production of power, but the production of votes through subsidies from the public treasury.

Suppose that electric rates for domestic service were at once reduced a flat 10 per cent. This sounds like a small amount, but it would result in at least partial confiscation of the property of practically every electric utility in the country. Yet it would benefit the average individual consumer less than a penny a day, or about $3.30 a year. This is hardly the way of economic salvation either for the nation or for the consumer.

The amount of construction in the electric light and power industry in 1933 fell to $120,000,000, the lowest level since pre-war years. During 1933 new financing by the industry amounted to barely $10,000,000. Practically all of this financing occurred in the month of January of that year. The total for 1933 compares with a yearly average of $650,000,000 in the ten-year period from 1922 to 1932.

An important factor in the radical decline of new construction, aside from the passage of the securities act and other legislation affecting the sale of securities, was the fact that there has existed during the past year excess generating capacity over and above usual reserves amounting approximately to 25 per cent and aggregating about 7,000,000 kw. The plans of the government, which provide in aggregate for the development of power plants calculated to produce annually an amount of electricity equal to two-thirds of the total central-station load that the United States, the most highly electrified country in the world, has been able to develop over a period of 50 years of rapid growth, have been another influence in slowing down the program of new construction of the electric utilities.

Utility influence on capital goods industries

ELECTRIC light and power companies as a group have been the largest contributors in this country to the market for durable goods, without which complete restoration of prosperity is impossible. During the ten-year period from 1922 to 1932 the electric light and power industry spent $7,500,000,000 for expansion and extensions. This is more than was spent by the railroads and was greater than all of the expenditures for roads, highways and canals. As late as 1930 the electric light and power industry spent for construction purposes the sum of $919,000,000. This outlay included an average payroll distributed throughout the country of nearly $40,000,000 per month, and was 2½ times the monthly rate of expenditure by the federal government on federal projects financed by P.W.A. funds, as reported in the March, 1934, issue of *Monthly Labor Review,* published by the U. S. Department of Labor. Even during the year 1933, with the demand for extensions at a low ebb, the electric light and power industry spent more money for new construction than the federal government dispensed for loans and grants to municipalities and expended on the Boulder Canyon and T.V.A. projects combined.

It is encouraging to be able to report that domestic electric consumers are reopening their homes and that they are buying refrigerators and other electrical appliances on a larger scale than last year. For the twelve months ended March, 1934, sales to industrial customers amounted to 35,462,000,000 kw.-hr., an increase of

about 11½ per cent over 1932, but still 20 per cent below the sales in the peak year of 1929.

The industry has made a creditable showing with respect to those elements of its business over which its leaders could exercise control, such as the promotion of increased use of electricity, the lowering of costs, the improving of standards of service and the extension of service to farms and smaller communities. Items such as taxes are not within its control. It is apparent, in order that the effect of the added burdens may not strike with more serious force the investors in utility securities, that there must be still further efforts to reduce costs and to increase the sale of electricity. We cannot afford to slacken in our efforts to advance the electric art in all of its branches. The younger men, in particular, who show promise of being able to make definite contributions to this art, should be given every encouragement to apply their ingenuity along practical lines to improve on past performances.

Utility securities are typically the savings of Americans of moderate means. Available information indicates that 10 per cent of our stockholders own but one share of stock. Three-fourths of our stockholders own ten shares or less. Two-thirds of all the stockholders are women. Through the investments of savings banks, insurance companies, educational institutions and similar agencies the ownership of utility securities is widely diffused among a large percentage of the population of the country.

Municipal ownership of utilities, as it is popularly termed, has been a subject of much discussion during the past year. Federal loans and grants have been made available for the construction of such utilities. Elections on municipal ownership in the past twelve months have been held in a number of communities, including some of the larger cities. Some statistics are interesting in this connection. Beginning with the year 1882, there have been established in the United States altogether about 3,900 municipal plants. According to the report of the U. S. Bureau of the Census, at the end of 1932 there were 1,802 municipal plants, less than half of the number that had been established at one time or another. Only eight new municipal plants were established in 1933. This compares with 125 established in 1915, 113 in 1910 and 111 in 1900. Municipal plants in 1932 served a population of 7,200,000, and the electric light and power companies served 82,700,000, or 92 per cent of the total. The relative growth of the two systems over a 50-year period speaks eloquently for the performance of privately operated companies.

It would be worse than foolish to ignore the fact that the losses sustained by many utility investors through special causes, on which it is not my province to comment at this time, have intensified the agitation against the utilities and have stimulated the advocates of government and municipal ownership to renewed efforts. But it should be noted that it is investors who have lost, not consumers.

Losses which investors have suffered through dishonest or profligate management, deplorable as they are, have not added a penny to the gas and electric bills of a single consumer. This is the central fact which emerges from the heat and smoke of controversy.

Our industry has nothing to fear from comparison with any form of government operation, provided the standard of comparison is the same in both cases; provided the "yardsticks" are of equal length. That is the point invariably ignored in the comparisons so fluently made and much of the recent legislation permissive of municipal operation makes it more and more difficult to arrive at a common basis of comparison.

If not unreasonably handicapped by the burdens from which municipal plants are free and others equally onerous, private industry will continue to demonstrate its superior ability to furnish electric service to the people of the United States.

A word as to regulatory bodies

FOR many years my position with regard to commission regulation has been well known. I have supported it on many occasions; but when proposals have been made that embodied grants of power that would exceed any proper authority that should be conferred upon such bodies, and that would be distinctly against the interests of utility properties, their investors and their employees. I have felt it my duty to voice an emphatic protest, along with that lodged by the investors themselves, the many fiduciary institutions, large and small, that also represent large bodies of investors, and, from the larger point of view, the public interest that is best served by dispensing even-handed justice.

Theoretically, regulation expresses the ideal relation between government and the utilities, and we of the electric light and power industry are in favor of thoroughgoing regulation, but in practice it threatens, under political pressure, to degenerate into an instrument of repression that will cancel its theoretical advantages. In certain jurisdictions we have witnessed its steady encroachment upon the domain of management, each step leading to another and still another. Following the time-honored pattern of bureaucratic growth, it seizes upon any and every excuse for enlargement of its powers. It is able to point to some situation somewhere, however sporadic and exceptional the case may be, in justification of its demand for more authority.

What regulation needs is not to be made more rigid but more flexible. It must be able to differentiate between what is minor and occasional and what is typical and general, and to deal with situations that are manifestly local and incidental in such a way as not to penalize the great body of the industry that lies outside the affected area.

Above all, the successful regulatory system is one which, while affording full protection to every legitimate interest, is not pushed to such extremes as to stifle enterprise and deaden initiative. These must be preserved to utility management at all hazards if the industry is to serve the highest public good. If regulation is to be made more "rigid" at the sacrifice of these qualities, it is bought at too high a price.

This is a time when business—all business—should be encouraged to go ahead, when it should be helped, not hampered. You cannot promote recovery by impairing credit and destroying values. You cannot revive industry by killing initiative and hamstringing enterprise. The road to recovery lies through constructive, not destructive, measures. Regulation is most effective when it

gives all parties embraced within its authority a square deal. It fails when it departs from that standard. While subjected to every reasonable regulation, the utilities of the country should be permitted to develop along lines that are economically sound and therefore socially most beneficial.

Under our constitution, public relations form no part of the institute program, but these relations cannot be left to take care of themselves. In some proper way the industry must go to the country with its case, openly, fully and fairly presented. If such presentation influences public opinion it will be the influence of the truth, the facts—so marshalled as to be beyond challenge, of the contribution this 50-year-old industry has made and is today making to the progress and development of American business and American life. Justice to the industry demands this and justice to the people, who are today bewildered by irresponsible clamor and misled by false and deceiving propaganda.

Whatever the obstacles in our path—and they are indeed serious—we shall go forward with resolute determination to make the industry as great in leadership as it is in technical strength, to protect and defend its legal and constitutional rights against unjust aggression, to promote the widest possible use of its service at the least possible cost to every class of consumer, doing our work as well as we know how, striving always for further improvement.

The outcome we leave to the native good sense and fairness of the American people.

Halt the Taxes by Checking the Spending

By JOHN J. JACKSON
General Counsel Westinghouse Electric & Manufacturing Company

TO KEEP down taxes we must prevent the expenditures being made in the first instance. It is an easy thing to spend money, but it is a difficult thing to repay it. Our present civilization demands certain conveniences and improvements that make it necessary to incur expenditures that were not required a quarter of a century, or even ten years, ago. If we are to develop this civilization and refine it, it will be necessary to incur additional expenditures for this purpose. However, we must plan such additional expenditures along an orderly and sane line and any normal increase in expenditures of this character will be well cared for with the normal growth and development of our communities.

Every individual and every utility and every business enterprise should bend its energies toward the correction of public expenditures and the prevention of the waste of public moneys. The utilities have been, and probably will continue to be, the especial prey of the corrupt politician. As these expenditures are the meat upon which the politician thrives, we all must, of necessity, whether we like it or not, interest ourselves in politics and the election of the right sort of legislators.

Per capita tax higher than France

Tax collections in the United States are larger than in the United Kingdom, Germany or France, but the ratio of tax collections to national income is lower.

Tax collections, national and local, for 1932, the latest year for which comparative data are available, are as follows: United States, $8,000,000,000; United Kingdom, $4,400,000,000; Germany, $2,400,000,000; France, $2,300,000,000.

From 1929 to 1932 the ratio of taxes to national income rose as follows: United States, from 11.8 to 20.3 per cent; United Kingdom, from 21.4 to 28.0 per cent; Germany, from 18.9 to 21.8 per cent; France, from 22.5 to 25.2 per cent.

On a per capita basis, taxes in the United States are lower than in the United Kingdom, but higher than in Germany or France.

Unless there is an abolition of waste and a material reduction in the cost of government there can be no material relief in the burden of taxation. Edison Institute represents a great and growing business and its members are peculiarly fitted to perform a distinct public service by lending its facilities as frequently as possible to those persons qualified to express themselves intelligently on matters of public importance such as questions of taxation, control of government expenditures, etc. Laws always follow public sentiment—they never precede it. The honest legislator and tax administrator will welcome such an educational program.

Progressive Engineering Pays

A splendid citation of what engineers are contributing toward improvement of service and reduction of costs. A progress report that more than justifies the engineers' activities and points to impending technological advances far greater than those already recorded. Lessons for all utilities to learn and apply.

By PHILIP SPORN
Vice-President American Gas & Electric Company

IF WE examine the utility industry we find that more than ever it is faced with a period of technological development and growth unparalleled in its past history. Consider, for example, the field of generation by steam-driven turbines. The possibilities of binary cycles and higher temperatures have barely been scratched. It is not at all out of reason to predict that within the next decade or so it will be possible to generate electric power by steam-driven turbines at properly located fuel and water sources at a total cost of not exceeding 2 mills. To get this power to sources of load will involve transmission, and we assuredly have not said the final word on that question. Not only does it seem likely that the reliability of a.c. transmission will, within a comparatively short time, be developed to the point where the use of two circuits to assure continuity of service will be almost unheard of, but there is also the possibility that d.c. transmission by the use of mercury tube inverters will alter our whole conception of the economic limits and cost of transmission.

Any or all of these developments are bound to have a great effect on such problems as cutting of costs of our service; on the ability of the industry to meet a competitive situation such as has sooner or later confronted every industry, or on the question of depreciation of plants. If the industry is to take maximum advantage of all these developments as they occur, and if it is to be prepared to meet all the situations arising out of these developments, it is vital that it have for its help and guidance properly equipped engineering staffs whose contact and continuity with all these and related developments has never been broken.

Management has generally recognized this, but, on the other hand, management has had to face the apparent difficulty of justifying complete and well-equipped engineering staffs at a time when capital expansion was down to zero. This difficulty has seemed particularly great when looking at the situation from the standpoint that the function of engineers is to spend money, and that when no money is being spent engineering staffs have no function to perform. The problem of obtaining proper engineering service at the time when capital expansion might be resumed was, under this viewpoint, to be solved by building up new engineering staffs. But in this, insufficient recognition has been given to the fact that the building up of competent, progressive and thorough engineering organizations is a difficult task. It takes a long time. In this regard, engineering organizations are different from sales organizations, where, for example, properly functioning staffs might be assembled within a few months' time, whereas it may take a decade to assemble a capable, well-functioning and economical engineering staff. Sight should not be lost of the fact that the difference between progressive and proper engineering and what we might call ordinary engineering may frequently be reflected in the cost of capital facilities so as to make all the difference between success and failure of an enterprise. A difference of only 15 per cent in the cost of a project will count for a great deal in an industry where it takes five years or more to turn over the capital invested.

Function of engineering staffs

It has been the experience of the company with which I am connected, and I believe this has been the experience of progressive companies in general, that progressive engineering, going hand in hand with progressive management, can, even in times of stress, devise or help to devise ways and means of effecting operating economies and of cutting costs of such capital expenditures as have to be made, and that these economies will more than justify the cost of such engineering. In other words,

progressive engineering can be made to pay its own way.

In order to point this out specifically, instead of in general terms, I shall use several engineering developments on the American Gas & Electric Company system as examples to show how engineering developments result in a reduction of capital and operating costs and help to expand electric service:

Generation

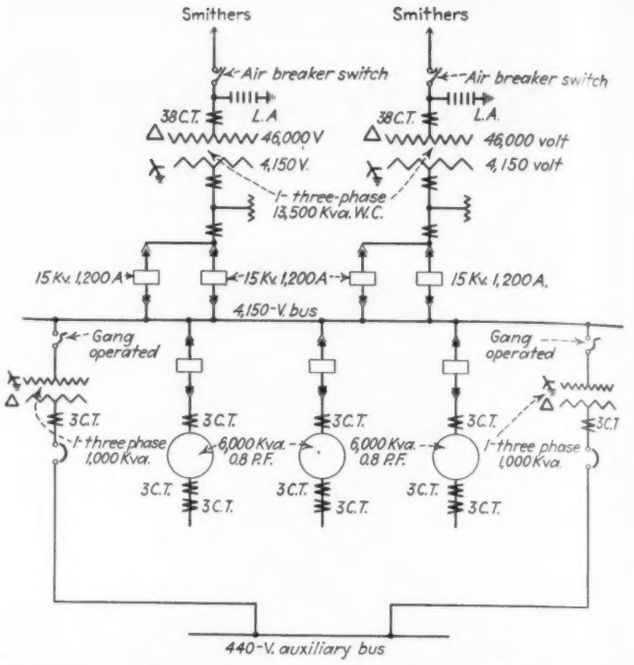
1. *Generating Stations and Idle Generating Capacity*—The American Gas & Electric Company system has had, during this depression, in common with the rest of the industry, a surplus of generating capacity. On our Midwest system, however, at the worst period of our load, this amounted to only 161,000 kw., or 27 per cent of our firm capacity. A good deal of that is due to sound management judgment, but one of the reasons why it was possible not to overbuild is the fact that we operate on an interconnected basis and can utilize interconnection both in the planning of our generating facilities and in their operation.

Through this process we have been able to stagger our plant building program between interconnected companies and more closely to figure addition of capacity on each system, always knowing that the interconnection was available to help us out in case the load growth turned out to be actually greater than our estimates in figuring out our construction program. This made it possible during the depression to devote all our energies toward effecting economies by making use of existing interconnections and transferring loads to the most efficient points of generation.

2. *Interconnection Between Various Subsidiaries of American Gas & Electric Company*—In the operation of our own companies we have developed the transmission system as a very reliable tool to the fullest use of interconnection, and we place full reliance on it. It may interest you to know that the 132-kv. transmission systems of our own companies throughout the Middle West comprise a total of 2,184 circuit miles of 132,000 volts.

3. *Interconnection with Foreign Companies*—Practically every possible function of an interconnection has been carried out on this system. During the past few years we have been working intensively in the developing of two fields of interconnection: (1) utilization of dump hydro, and (2) utilization of diversity between systems, particularly between the East and the West. Our Appalachian Electric Power Company is interconnected with the Carolina Power & Light Company near Danville and with the Tennessee Public Service Company near Kingsport. During the past few years we have developed our system to make possible the absorption of the dump hydro energy made available through those systems.

4. *Some of the Engineering Steps that Had to Be Taken to Make Possible This Use of Interconnection*—Even with the transmission facilities available, many engineering measures proved necessary to make possible the utilization of the interconnections to the maximum possible extent. We can only mention a few of them. In order to make possible efficient generation and quick backing off or placing on the line of units, turning devices were installed on the turbines located at strategic points. The relaying on the principal ties was a particularly burdensome problem with heavy transfers of power, since in many cases these transfers were almost equal to the minimum short-circuit capacities of the line. The development of carrier-current relaying was pushed to a successful conclusion after we became convinced that standard overload and reverse power or reactance type relays were inadequate. Frequency and load control were given greater attention.



Single-line diagram of a hydro station designed for simplicity and reliability

5. *Some Examples of Paying Steam Plant Investments*—We found station maintenance records a fertile field for studying possible savings and in station after station we went on such fishing expeditions. There were many cases found where a piece of equipment had enough maintenance spent upon it to renew it completely every four to five years, whereas new equipment was available that would give a life from 2½ to three times as long, at possibly no greater cost. These investigations disclosed as typical: Pump impellers on circulating water pumps originally improperly specified, which indicated the desirability of new type impellers; high maintenance on rotary air pumps, which dictated the installation of steam jet air pumps; higher load factors on some turbines than originally contemplated, making possible a very handsome return on the use of additional extraction heaters; chain grate stokers as substitutes for underfeeds, making possible the solving both of a high stoker maintenance problem and of an ash situation; the need for installation of water-treating systems where boiler tube replacement was high. Many other similar cases were found which offered the possibility of annual savings running from 1/6 to ½ of the amount invested.

6. *Some Examples of Steam Plant Operating Economies*—A similar sort of investigating program showed many cases whereby comparatively slight changes in the operating cycle or set-up maintenance or operating costs or both could be reduced. As typical of such changes, in many cases it was found possible to raise the average steam pressure and temperature with comparatively small or no new expenditures; to eliminate condenser refrigeration; to cut down generator or house generator thrust bearing failure by eliminating these thrust bearings

entirely and taking care of the thrust on the main turbine thrust bearing, thus saving not only on the cost of thrust bearings, but also reducing turbine outage. There were many other similar cases.

7. *Capital Improvements Studied to Reduce Cost to a Minimum*—While on the subject of generating stations, you may be interested to examine the one-line diagram of one of two similar hydro-electric developments which are now being constructed on the Kanawha River near Charleston, W. Va., where the United States government has erected dams for flood and navigation control and where we are erecting the hydro and electric generating facilities. Everything about the one-line diagram, which shows the proposed London station, has been studied to reduce to an absolute minimum the amount and elaborateness of the equipment for the job. Thus, the three generators are being switched to a single 4,000-volt bus, two 1,200-amp. switches in parallel being used for the step-up transformers. This is actually cheaper than one 3,000-amp. switch. No by-pass or transfer facilities are provided, the reliability of modern switching and the availability of interconnection making this hardly justifiable. Two 44-kv. lines will tie in the plant to the 44-kv. transmission system of the Appalachian Electric Power Company, a mile or so away; we have no 44-kv. switching. Two three-phase transformers, either of which is adequate to take care of two units, make possible this simplification. There is only one auxiliary bus. Nothing in the plant will be duplicated and the criterion by which judgment will be passed as to whether any piece of equipment will be installed or not will be either (a) its absolute necessity for safety, or (b) its ability to pay for itself.

Transmission

OUR system is laid out on the basis of centralized generation and transmission of energy. A decade or so ago, when we first started transporting large blocks of power and extending our transmission system, we soon found that the greatest factor in preventing the continuous flow of power over these lines was lightning. Confronted with this, we started an intensive study and field research of the lightning problem, with the result that the problem has resolved itself into either:

1. Keeping the lightning off the line, or
2. Providing means of taking the lightning off the line to ground without permitting power current follow up and, consequently, line outage.

Both of these methods will theoretically provide a lightning-proof line. However, the second method—that of taking the lightning current to ground without causing an interruption—seems practical, and under many conditions, we believe, will work out very economically. On this phase of the problem we have continued our work during the last three years with the result that we have accomplished the following:

1. *The Expulsion Protective Gap*—The expulsion gap is essentially an inclosed gap set to flash over below line insulation and having the characteristics of a miniature circuit breaker. However, it will not stand more than one-half cycle of arcing. During the past three years we equipped two 132-kv. lines with expulsion gaps. One 65-mile 132-kv. line equipped with these gaps has not suffered an interruption from lightning since the gaps were installed last July. As a consequence we have installed them this spring on a second 132-kv. line where continuity of service is particularly important. For the first time we see the possibility of building a single high-tension transmission circuit where no more capacity is needed and not having to build two circuits for continuity, except where the magnitude of the load warrants two circuits.

2. *Use of Counterpoises*—Another means of lessening outages on transmission lines due to lightning is, of course, the use of ground wire and the buried ground wire or counterpoise. We have done a great deal of work on this problem. During the last year flashovers had vanished on one end of the line where counterpoises had been installed. The interesting thing here too is to note that not until we had about five years' records on the line, and we were able to study the performance, were we in any position to make a really intelligent application.

3. *Economies in Transmission Line Construction*—We had occasion during the last two years to rebuild one of our wood-pole 132-kv. lines. The old single-circuit No. 4/0 non-ground wire, wood-pole line cost us approximately $12,000 per mile. The new double-circuit 397,500-circ.-mil ground wire steel tower line cost us approximately $11,100 a mile.

4. *Reduced Insulation on Power Transformers to Save Cost*—It became necessary recently to provide a second bank of transformers at a station where four 10,000-kva., 132,000 to 33,000-volt single-phase transformers were installed in 1927, and it was decided to purchase two additional transformers to complete the second bank.

Confronted with quotations 55 per cent higher than the original cost, we decided to cut insulation to the very bone, or perhaps iron in this case, and we asked for a design corresponding to a 25-in. co-ordinating gap, as against and 38½-in. co-ordinating gap of the old design. In order to make this safe we mounted the lightning arresters right up against the bushings as part of the transformers, and in doing that we were able to provide our facilities at approximately the same cost as of six years ago.

5. *High-Speed Breakers*—We have continued our work of speeding up high-tension breakers. Practically all of our breakers today operate on a seven-cycle basis. This has meant to us a reduction in line burning, lessened insulator chattering, reduction of voltage surges and, therefore, trouble with customers' equipment, but we are not at the end of our search for speed.

6. *High-Speed Relaying*—Years ago we realized that with a greater concentration of power on our systems we would have to develop faster relaying. More power means more damage once you get a breakdown. Of all the elaborate schemes that were proposed, not one has worked out successfully, with the exception of the differential method. An exception to this is the very simple method we developed in which we went back to the old relay practice of 25 years ago, in which current was the sole basis of selection. In our modern systems we use two instantaneous overcurrent relays for phase protection and one for ground protection. The relays are set to pick up for a fault occurring within 90 per cent of a line section and the rest of the 10 per cent is handled by the standard back-up relays. In many cases we were able to go to our salvage-abandoned property and pick up the necessary relays for this among those abandoned six or seven years previously. With very little new expenditure we were thus able to obtain fast clearing of faults, elim-

inating almost entirely conductor burning, and we reduced complaints due to surges to almost zero.

Distribution and utilization

GENERATION and transmission are, of course, important, but the distribution end of our plant accounts for an even larger part of the total investment. The question, therefore, of what we have done in the field of distribution and in the related field of utilization may be of particular interest in this connection.

1. *Cost Reduction of Rural Lines*—During the last three years we have devoted a great deal of attention to the problem of reducing the cost of rural lines. Our aim here has been not to use the cheapest possible material, but rather to find materials that gave the lowest over-all cost, taking into account the rate of depreciation. To accomplish this we have simplified our rural lines to bare elementals.

2. *Regulation of Rural Lines*—Although it is expensive to reach them, rural customers expect to receive as good quality of service as urban customers. Rural lines often extend over considerable distances, and even though they may be lightly loaded, they may have poor voltage regulation. To make possible the correction of such a condition under the limited revenue that the rural line generally yields, we co-operated with one of the manufacturers in the development of an automatic step-type regulator. Such a unit is entirely self-contained and the cost was approximately 50 per cent of the standard induction regulator.

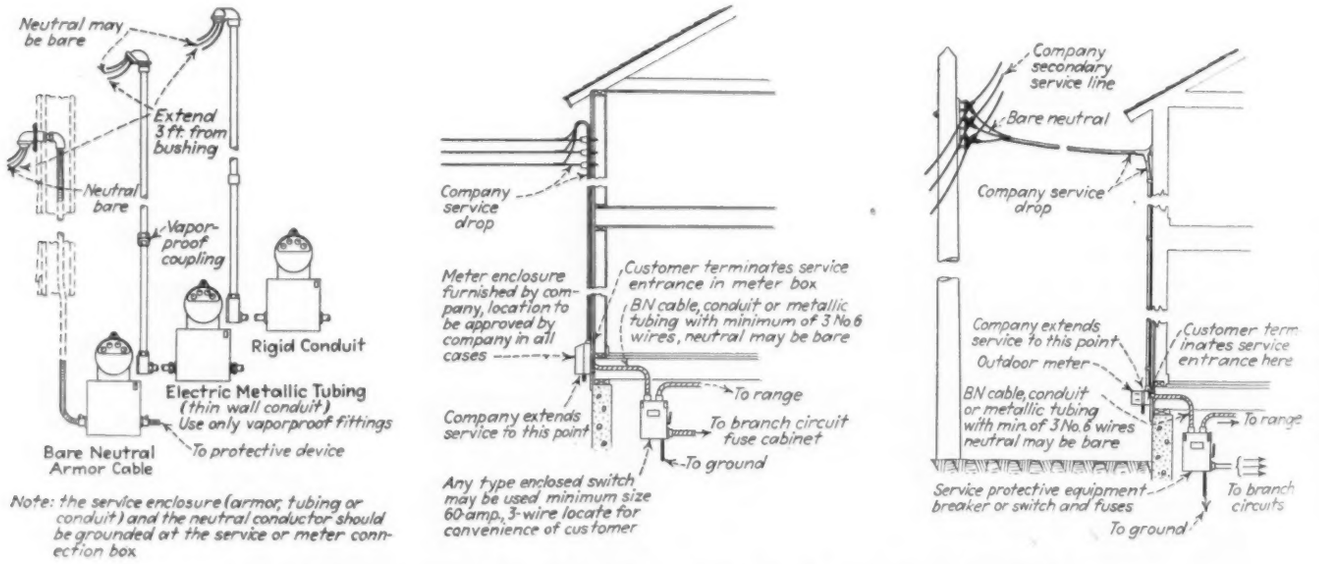
3. *Joint Use of Facilities with Communication Companies and Joint Use Agreements*—During the last five years we have made a comprehensive study of all our joint use agreements. Joint use between a power company and one of the Bell companies presents quite a different problem than joint use with the smaller telephone companies serving only local areas. We used to have each case of joint use covered by a separate agreement, and it was not at all uncommon to have a lengthy agreement drawn covering the use of a single pole. By standardizing on the various types of agreements, we have not only been able to cut down enormously the engineering and legal expenses, but this standardization has resulted in much more equitable agreements.

4. *Diversion of Energy*—Energy theft, euphemistically termed energy diversion, has always been with us, but was considered of minor importance until the spring of 1932, when a few field reports indicated that it might be a serious problem. We at once started an investigation of our services, taking 10 per cent of the total number, and found actual cases which were apprehended one half of 1 per cent, indications of tampering 3 per cent, or a total of 3½ per cent.

Continuing the investigation, we found late in 1933 that diversion was increasing, and a report from one of our larger companies showed almost 16.9 per cent of actual diversion or indication of diversion. This figure was nearly five times as great as the average for all the companies for the previous year. Part of this was probably due to improved methods of detection. On the other hand, there were some bad sections which showed that over 20 per cent of the customers were diverting energy. Check meters on transformer banks in such sections showed losses of energy as high as 30 per cent. Plans were therefore made and put into operation for rebuilding approximately 10 per cent of all residential installations in 1934. If diversion is not definitely checked, we shall probably rebuild as many or more in 1935.

The economics of rebuilding to prevent diversion of energy are interesting. The average cost of rebuilding a residential job is $6. Of this amount a proper charge to operation is approximately $1 and the balance, or $5 covering the service installation and the outdoor box and its installation, is a legitimate capital charge. Figuring a gross return of 13 per cent on the capital investment, the total cost during the first year (if the dollar involved in changing the meter location, etc., is all charged off the first year) is $1.65 per installation, but after the first year is only $0.65.

Our records show that for each case of diversion corrected, on the basis of an increased revenue of $1 per month, or $12 per year for each case of diversion corrected, where a complete section is rebuilt and where the diversion runs 16.9 per cent (this was the percentage


Neutral may be bare
Extend 3 ft. from bushing
Neutral bare
Vapor-proof coupling
Rigid Conduit
Electric Metallic Tubing (thin wall conduit) Use only vaporproof fittings
Bare Neutral Armor Cable
To protective device
Note: the service enclosure (armor, tubing or conduit) and the neutral conductor should be grounded at the service or meter connection box
Company service drop
Meter enclosure furnished by company, location to be approved by company in all cases
Customer terminates service entrance in meter box
BN cable, conduit or metallic tubing with minimum of 3 No. 6 wires, neutral may be bare
To range
Company extends service to this point
To branch circuit fuse cabinet
To ground
Any type enclosed switch may be used minimum size 60-amp., 3-wire locate for convenience of customer
Company secondary service line
Bare neutral
Company service drop
Company extends service to this point
Customer terminates service entrance here
Outdoor meter
BN cable, conduit or metallic tubing with min. of 3 No. 6 wires neutral may be bare
To range
Service protective equipment breaker or switch and fuses
To branch circuits
To ground

Service entrance methods used on the American Gas & Electric system

Left—Standard service entrances. Center—Standard residential service entrance for outdoor meter. Right—Proposed tamper-proof service entrance construction for outdoor meter.

indicated in one company) the capital expended for the whole section will be returned in 2½ years. Where only 10 per cent diversion is indicated, the capital investment will be returned in five years. Or, stated another way, after the first year it takes the existence of only 5.4 per cent diversion to carry the investment.

5. *Service Installations and House Wiring*—This work, for many years, was left almost entirely to the electrician, the inspector and to the code—I am talking, of course, of the National Electrical Code—but it didn't work out so well. Complaints were coming in to us that wiring and service installations were hampering and restricting the sale of current-consuming devices and the complaints were fully justified. The survey which we undertook showed that this subject was badly in need of engineering study. Practically all the agencies which had been connected with it until that time had not only no interest in the broadening of electric use, but had specific interests which prevented them from acting along lines that would result in minimum expenditure to bring about safe and adequate services or wiring.

Evolution of service entrances suitable for lighting and range service has been rapid. The first wiring used in 1910 cost from $10 to $15 per service entrance installation. The next, in 1929, had been boosted in cost to from $75 to $100. It was about this date that we decided to take a hand in the matter. In this we had some company. In the type of installation we used in 1933 the cost had been reduced to from $20 to $25, partly due to decrease in material cost, but primarily the result of proper engineering. It is a decided improvement over the 1910 installation and is simpler and better than the 1929 job.

About 1929 we made exhaustive field tests in connection with the use of bare neutral cable and elimination of fuses ahead of meters. The result is a simple inclosure which had been developed for the meter, a bare neutral non-weatherproof cable concealed inside the wall, and bare neutral applied to thin wall conduit and to rigid conduit.

Another development has been the outdoor meter and weatherproof service cable. This represents a forward step in the study of this entire question, since to make the outdoor meter practicable it was necessary to develop a weatherproof cable for outdoor installation.

Maintenance practices save money

ONE way of looking at maintenance is that it is the job of putting a piece of equipment or apparatus back into operating condition. On the other hand, it is possible to apply new ideas in maintenance that will result not only in lower maintenance costs but also yield information that will be of great help in later design, specification or selection of equipment. As illustrative of this we might mention:

1. *Testing of Insulators in Service*—By providing facilities for continuous testing of insulators on our high-tension transmission lines on a reasonable cost basis we have not only been able to remove defective insulators from the lines, and so kept them in a high state of service reliability, but have been able to obtain data which, co-ordinated with laboratory test data, have given an excellent check on the rate of deterioration to be expected in insulators. These data were made possible by such testing and show the rate of deterioration of five different makes of insulators, each of which has a good commercial reputation. One insulator tested should give us a life of 50 years before failures reach a rate where the line becomes inoperative, while another will probably have run its course in about 20 years. It takes, you see, a long period of time before such information begins to be significant, but eventually it means a great deal in the economical operation of a transmission system.

2. *Testing of Oil Switch and Transformer Bushings*—Some five years ago, when bushing troubles on oil switches and transformers began to develop to an unusual extent, the problem was tackled and a method of test developed which has now become a routine. We have since tested over 10,000 oil circuit breaker bushings and have not only found a startlingly large percentage of defective ones but, what is more important, have been able with close precision to pick bushings that were likely to fail a month or more subsequent to the test. By removing them in time we have avoided dozens of interruptions to service with all the concomitant damage. Furthermore, we have learned a great deal about what makes bushings fail. Some of the new designs that have been evolved as a result of this work are far superior to those that have been giving us trouble. The cost of this testing is only a small fraction of the savings due to the prevention of damage to equipment alone.

3. *Painting*—There is probably no item in connection with utility operation on which so much misinformation is prevalent as the item of painting. When we found that original paint coats failed at the end of two or three months' service, or that paints purchased to apparently similar specifications failed on one piece of equipment in one-fifth the time that it failed on another, and when we found that our paint bills, taking into account material and labor, ran above $100,000 dollars a year, we decided it was time to apply some engineering to the problem. As a result of five years' continuous work on the problem (including several modest but complete field exposure laboratories) we have developed not only some satisfactory methods for testing and selecting paints, but have learned a great deal about the preparation of surfaces and the proper application of paints. Furthermore, we have found that a great many of our people in the field have been anxious to take hold of this age-old problem in a scientific manner and are now themselves developing new ideas in connection with it. Manufacturers of equipment have been devoting more time to the surface preparation of the equipment that they send out and to proper painting of it.

While we are primarily engaged in a business of generating, transmitting and distributing electric energy, nevertheless there is a certain amount of research that we have felt we had to undertake if we are to continue properly to carry out our function and to keep ourselves in a position to take advantage of possibilities for either expanding our service or cutting its cost.

Progressive management

At the very outset I pointed out that progressive engineering must be co-ordinated with progressive management. Engineering developments are only effective when put into action. Opportunities for presenting engineering studies and ideas must not be restricted and decisions must be arrived at with reasonable promptness after all the factors in the situation have been presented. Under such co-operation progressive engineering will not only pay its way, but will help pave the way toward better utility service and a sounder utility structure.

How Can All-Electric Homes Be Sold?

By ALLEN L. BILLINGSLEY
President Fuller & Smith & Ross, Inc.

Now—today—is the critical time to start promotion of the all-electric home. Those at the Century of Progress, at Mansfield, at Nela Park are far in advance of past and current ideas of home planning and home development. The advanced electrical homes will never again be so new, novel and different from people's habit of thinking of their homes as they are today. Let us capitalize the new conceptions now.

I LIVE in a house that has an electric refrigerator, an electric range, an electrically operated heating plant, a washer, an ironer, two radiant heaters, an electric clock, two radio sets, two vacuum cleaners, two fans, two food mixers, two irons, a percolator, a coffee maker, a waffle iron, a health lamp and a vibrator. The lighting in my living room is better than that indicated for normal vision on the Sight Meter. I have 200-watt lamps in the kitchen, the bathroom, the halls, the basement. I ask you, am I living in an electrical home?

When I put that question to my wife the other night she looked at me in surprise, and answered: "Why no, I shouldn't say so."

When I use the term "electrical home," and as my wife understood it, I refer to a home that expresses the newest home-designing thought, with the appliances scientifically planned and built in, with a complete kitchen and laundry, the most modern lighting, and all the other worksavers and conveniences that women have seen and admired in such homes as the Westinghouse Home of Tomorrow in Mansfield and the General Electric one at Nela Park, and those presented in articles in current magazines. My better half feels sufficiently familiar with such homes that notwithstanding our possession of most every individual electrical appliance—even though our home is lighted according to modern standards, yes, even though our current bills are higher than those of practically any of our neighbors—she does not think of ours as an electrical home. To achieve that ideal we would want to build an entirely new house, throughout which a planned generosity of comfort and convenience and a planned economy of operation would be the outstanding characteristics.

Now, is it a worth-while undertaking for utilities to seek to plant such an idea in the minds of all their customers? Will sales of electrical homes be possible? Will sales of appliances or current be aided by such an effort? How should the effort on the electrical home be proportioned to that on more specific promotions, such as ranges, water heating, lighting? In other words, what is the philosophy which would lie back of electrical home promotion?

There is one fact which we all must recognize, which is, that a revolution is taking place in the ideas that people have held as to what constitutes a modern home. Whether or not we, as individuals, approve the strange-looking structures with flat roofs and pent houses that we see at the Century of Progress, or illustrated in the home-building magazines, these and the other new forms which "home sweet home" is taking have caught the interest of the masses.

Whether we realize it fully or not, people have come to credit electricity with being one of the chief agencies, if not *the* chief agency, in stimulating these new developments in modern dwellings. Whether a modern home is labeled "an electrical home" or not, the public expects to find electricity as the major means of supplying most of its advantages for livability.

Electricity, indeed, gets the credit for the presence of many of the ingenious new cabinet arrangements in the kitchen, and the non-electrical conveniences in laundry and basement, largely because they have come along as electrical contributions to the home have come along. Yet when I checked up, the other day, on the cost of the electrical equipment in the Home of Tomorrow at Mansfield, I learned that it does not total 20 per cent of the total cost of that home. It is an electrical home, however, and the public so considers it, although four-fifths of the money needed to build it went for land, steel, concrete, brick, furnishings and other non-electrical products.

Can electrical homes be sold? We are told that we are close to a revival of active house building. How

close may well be left for the New Dealers to prophesy. But the wise utility will certainly regard the new house field as the first objective of electrical home promotion. If the new ideas in home construction have taken root in the public mind, it is our function to provide clear definitions of what constitutes an electrical home for the guidance of builders, architects and prospective home owners.

It is somewhat difficult to secure complete statistics on the number of new houses built annually, as a measure of the possibilities of this market. According to the Federal Reserve Board index, the two high years of residential construction in the United States were 1925 and 1928. These two years totaled about the same. I have examined the figures for 1925. From these figures it appears that, exclusive of the homes in the farm-rural areas, there were built that year about 450,000 residential structures, or about three new homes for every 100 then standing. This would mean that in a peak year in your territory there were built about 3,000 new homes for every 100,000 that were then standing. This is a sizable market to shoot at. Even if it is quite some time before we reach a peak year like 1925, if the upward economic trend continues, it ought not be long until we can reach half that degree of activity.

Now is the time to plan for sales

IT WOULD pay to begin now to make plans actually to influence such a market. If the sale of appliances by groups is anywhere possible, it is here in the new house market. If advanced electrical conceptions, such as the electric home symbolizes, are anywhere salable, there is the market.

And now—today—is the critical time to start promotion of the electrical home. The electrical homes at the Century of Progress, the Home of Tomorrow at Mansfield, at Nela Park are far in advance of past and current ideas of home planning and home development. They are genuine news now. The advanced electrical home will never again be as new, novel and different from people's habit of thinking of their homes as it is today. Therefore, let us capitalize the new conceptions now, and to the fullest possible extent. In home development we are now where the automobile was when the manufacturers began to change the power plant from something simple and crude to something complex and highly refined. Let us not miss the chance to capitalize this period in the evolution of the electrical home.

Many utilities are organized now to give wiring service and engineering and lighting service to architects, engineers and contractors. Should they not now ask if their facilities are sufficiently broadly organized? Are they sufficiently informed on all the newer developments in interior home arrangement, in cabinet design, in interior decoration, in kitchen, basement, porch, garden and room details, where electrical applications both directly and indirectly may be included?

For influencing the new home market, and more particularly for equipping their own organizations to work with the factors in the building industry, it would seem inescapable that utilities themselves should build model electrical homes. You have had so-called electrical homes before, but have you had them in which electricity was so widely and fundamentally employed as it can be under the new conceptions? Many electrical homes in the past have been conventional houses that were notable because they contained a complete array of standard appliances. The interest of the public, and of architects and builders, has advanced to a point where appliances and electrical applications are an inherent part of the design of the house. This presents utilities with new problems, new demands for knowledge and information, new opportunities for salesmanship and for service.

Appliance market of $225 per customer?

The commercial manager of a Pennsylvania utility of my acquaintance made a careful estimate of the possible saturation of appliances in the homes of his state. He did not assume 100 per cent saturation of all appliances as a practically realizable figure. He knew that today when we think of practically all homes having baths, only 70 per cent of the urban homes do actually have them, to say nothing about the lower percentage in the rural areas. He estimated practical vacuum cleaner saturation in his territory to be 75 per cent of the wired homes, compared with 49 per cent saturation now. He estimated practical range saturation to be 36 per cent of the wired homes, compared with 6 per cent now. He estimated refrigerator saturation at 56 per cent, compared with 24 per cent now. He estimated water heater saturation at 30 per cent of the wired homes, compared with 1 per cent now. Electric clock saturation, because of duplication, he set at 125 per cent; radio set saturation at 130 per cent for the same reason.

Then he took seventeen recognized appliances and calculated the number yet to be sold in his state to reach these modified and practical totals of saturation. At average retail prices he obtained the astounding total of $405,000,000 in appliances yet to be sold. Project this on a national basis and it becomes $4,500,000,000, or $225 a domestic customer.

Add to this a reasonable estimate for air-conditioning and improved lighting equipment ($100 per customer as an estimate), and even according to conservative estimates you have $300 to $350 worth of appliances to sell to each domestic customer before you have attained the same universality in their use as applies to bathrooms.

This is a big undertaking that requires all the tools of promotion and all the ideas for promotion that are at hand or can be created. The electrical home is one such idea. It is the biggest promotional idea yet developed, because it can capture more public interest, promote the idea of more appliances, much more dramatically than can any direct promotion of the appliances themselves.

The electrical home permits the sale of electricity in the home as a group of integrated services, and this is something that electrical promotion needs. Most load-building activities of utilities leave something to be desired in that they are product-selling activities—the products being individual appliances. The electrical home relates certain appliances to one another, it makes a complete demonstration of what electricity offers to the home, it integrates the electrical conception, and what else have you for doing that in your domestic load-building promotion?

The electrical home of tomorrow is here today. Tomorrow we will have a newer and better one. It may not be salable in large numbers, if large numbers could be constructed. But the characteristics that impede its immediate salability are those that make it an outstanding promotional opportunity. As such—what shall we do about it? Tomorrow will be here before we know it.

The Business of Getting Business

Depression-time thinking still dominates in the selling of both electrical energy and of the equipment and appliances with which it must be linked for use. A new perspective and a new approach will open the door to vastly greater business for the industry. Promotional efforts must be well financed, well planned and aimed at the personal interest of the consumer.

By GEORGE E. WHITWELL
Vice-President in Charge of Sales Philadelphia Electric Company

THE other day I heard a conundrum, the answer to which even though involving no tricks, further questions, or other artifices so common to some conundrums, nevertheless left me with no idea as to how it satisfactorily replied to the original question asked. So I tried it out on others. They, too, failed to see any point, although there is one, I'll try it on you and see what happens: The question is asked, "Why don't old ladies like moving pictures?" Of course you give up, so here's the answer: "Tall ladders make them dizzy." Silly, isn't it? And yet there is a point which you will get as you think it over.

The business of getting business in our industry is not unlike the conundrum which I have just asked and which I have answered in a manner which has a point, but which very few of you have yet fully appreciated. You are not thinking correctly. Similarly, many are the questions that have been asked about getting increased electricity consumption; many are the correct answers that have been given as to how this can be done; yet frankly, little has been the practical understanding of these answers that alone can produce the large new use of kilowatt-hours that must be obtained to meet today's conditions. Why is this? We haven't been thinking correctly. We have gaged the present and future by the past. Instead, we should have been blazing new trails unhampered by the fetters of the limitations of our past accomplishments.

A new measure of accomplishment

IT HAS been hard enough to hang on to what we have had, let alone secure new or additional business. It has been difficult to promote new projects or methods when for every step forward we have slid back two. Fortunately, we have not let these obstacles prevent us from continuing to look forward in our planning; yet I wonder if the psychology of these years has not affected us to the extent that we are too easily satisfied with what today seems like a good job? The rapidly changing times compel us to change the standards by which we measure accomplishment.

This seems an ideal time to take an inventory. We are, figuratively speaking, at the crossroads, and I cannot help but feel that the forces being exerted externally will change the course of our business for a long time to come. Your job and my job require that we so choose the way at this crossroad as to secure the smoothest travel over the longest distance, taking advantage of conditions as they exist and preparing for what difficulties we see ahead.

This is a sound course of procedure. Naturally, we do not like the obstacles placed in our way, but we get nowhere by permitting our dislike to sap the energy which we can more profitably expend in taking advantage of the favorable factors which are in evidence if we will see correctly and think in line with the new conditions.

Has it occurred to you that in spite of the unfavorable publicity recently directed at our industry, there has been, during the past year, more front-page news about the advantages to the householder of a wider use of electrical appliances than we, as an industry, were ever able, in the past, to obtain? This can be transformed into a desire for, and then the purchase of, more appliances to lighten the household tasks.

The very fact that people can be aroused—and certainly they have been by the events since March 4, 1933—indi-

cates that they are not totally and permanently apathetic and that, for the first time, many are considering questions to which, in the past, they have given little or no thought. The publicity on electricity use in the home is something for us to capitalize. Have we done so yet or have we used the standards of the past, gnashed our teeth because much of the news about us was unfavorable, unfair and untrue, and completely failed to realize that front-page space on home appliance use is something that money cannot buy?

A new selling approach necessary

There is no formula for getting business. The world no longer beats a path to the door of the man who is content merely to make something better than his neighbor. Both he and his neighbor have to sell the value of their products. You may make the best electric refrigerator in the world, but if your customer wants an automobile, how do you make the sale? If you are alive to your opportunity, you point out the advantages of owning not just your refrigerator, but an *electric refrigerator*—creating in the prospective customer's mind an element of doubt as to whether, after all, he had not better defer the purchase of a car until he can own a refrigerator, which, enabling him to save more, will permit him more easily to purchase the car. The point is that we must sell the value of the services rendered by the product we have to sell.

Too much emphasis cannot be placed on a knowledge of the buying habits and buying ability of those to whom we are attempting to sell. Without an intelligent, detailed and painstaking study of these characteristics we cannot hope to adapt our policies or program to meet their needs. A simple but effective demonstration of this truth is obtained by checking up the list of our unprofitable customers. In an average company the unprofitable residence customers number about half of the total. These are the customers whose annual kilowatt-hour consumptions must be raised in order that rate reductions may be effected soundly in the much-discussed higher blocks. Any forced or expedient reduction at the present time to these small users will only aggravate the problem and increase the percentage of unprofitable customers, thereby rendering a further injustice to those whose increasing use entitled them, perhaps, now, to rate reductions in the lower blocks.

Survey the unprofitable customers

ARE you making a survey of your unprofitable customers to determine their requirements and the methods necessary to increase their annual consumptions? Or are you satisfied to increase kilowatt-hour consumption per residence customer by sales of load-building equipment almost entirely to already larger users? Certainly this latter job is very necessary, but it is only one of the two jobs that must be done if your rates are to remain reasonably equitable and, at the same time, become low enough to satisfy the "yardsticks" of today.

Yes, knowledge of the market is essential today so that a planned program can be arranged. And this program should cover, not merely this month or next, but this year and the two or three that will follow. Plans worked out in detail are only necessary for the year at hand, but quotas of accomplishment can be set for several years ahead. This eliminates the sporadic efforts with which we have all had sorry experiences. They are a few of the fetters which still chain us to the past.

Sell the "value of service" idea

BUT the backbone of even a sustained effort lies in our ability to sell the value of our service, constantly hammering on that idea until it is accepted by the public. Too often have we talked and written about the glories of our size, our annual expenditures, our generating stations, our miles of cable and transmission lines—all of which, if laid end to end, will get us nowhere if Mrs. Smith does not realize the value to her of, let us say, a vacuum cleaner and how long she can use it for a nickel. Our job is to so manage that we provide electric service of such value that the customer feels that his money is well spent. I believe this can be done only by sustained, co-ordinated efforts in all branches of our selling. Whether we actually sell appliances or equipment over the counter or not, we have to sell the value of the service we render. And, fortunately, our new-found competitors are doing some of this selling for us on the front pages of the newspapers.

In the past, much of our advertising has been with those things which appealed to us. Therefore, we have felt that, inasmuch as we are human beings, they should have appealed to other human beings—our customers. Rather, beginning today, our appeals should be to those things in which these customers are interested.

The men in this audience do not care about the size of the factory producing their shaving soap, nor the investment in equipment necessary to make and fill the tube. But what we all consider is whether that soap does its job efficiently; does it leave our faces raw? If so, we change the brand regardless of how vast an enterprise was necessary to provide us with one tube of the stuff. So it is with the electric utility business, with this exception that, not being able to change the brand, the residence customer concentrates his animosity on those in the electric company with whom he deals and forthwith reduces his use of electricity. The industrial customer listens at once to the persuasive sales talk about Diesel engines.

We have only begun to change our attitude in this respect. Beware lest our recent resigned attitude toward trouble persuades us that we have changed our attitude sufficiently completely. I am convinced that we, as an industry, must discard our preconceived notions of utility advertising. We have been guilty of the sin of "talking down" to our public, which, aside from being decidedly poor taste, creates little understanding and plenty of antagonism. We can humanize the service which we have to sell. With a little thought and ingenuity, we can change the customer's feelings toward electric service from a thing which takes money away from him every month to a means of providing pleasure and comfort for a comparatively small expenditure. To do this, some device is necessary to translate electric service from the indefinite and almost indefinable thing that it is to a human, appealing individual—an electrical servant.

The rate charged per kilowatt-hour is not necessarily a controlling factor in obtaining large consumptions per residence customer. The truth of this is proved by the usage in the city of Tacoma, Wash., where, according to a paper presented last year by the Superintendent of the Lighting Department of the city of Seattle, the

average annual consumption in 1931 was 1,550 kw.-hr., but where only 27.5 per cent of the residence customers then had ranges, water heaters or house heaters in spite of a rate of one-cent per kilowatt-hour in the low block. The balance, or 72.5 per cent of the customers, had an annual consumption comparable with the average for the United States, or about 500 kw.-hr. per year. Tacoma stands for abnormally low rates, but the value of electric cooking had been sold to only one-quarter of the residential customers. Better jobs have been done by privately owned utilities with higher average rates.

Talk in terms of user-benefit

TO MANY rates do not mean much of anything. But tell the housewife that 5 cents a week will operate her washing machine to wash all the clothes for her family of five and she can understand that. Show her the cost of doing a certain job, whether it be vacuum cleaning, ironing, cooking, toasting bread or obtaining the hours of entertainment provided by the radio. This, I believe, is the way to sell the competitive value per dollar of electric service. The way not to sell electricity is to tell the bewildered householders that if they use so many kilowatt-hours they will be charged so many cents for each succeeding one. In the first place they do not know what a kilowatt-hour is, and after all, why should they? In the second place, they do not know what a kilowatt-hour will do, and does it matter? But they do know that an ordinary light bulb burning so many hours for a cent is a great convenience.

Any one will admit that the utilities have done an excellent job in providing capacity to meet the needs of their customers. Little more money need immediately be spent for facilities. But to increase the rate of selling, more money than in the past—much more money—is necessary per sale. With you, in this audience, lies the future of this industry of ours. You can so plan that if pressure is brought to bear for excessive rate reductions before our normal growth warrants them, we as an industry will be able to meet the demands of the public with a minimum of loss. But to accelerate the rate of selling of domestic use we must spend real money for advertising and promotional work if we are to divert our way more of the family budget and thus, through domestic sales which will be two and three times those now enjoyed, put ourselves in a position for lower rates that will benefit both the customer and us.

It will be necessary to revise completely our own point of view. One thousand ranges in a city of 300,000 customers may be a good job, judged by 1930 standards, but they are of little avail under the conditions of 1934. In such a city 10,000 are needed this year, 15,000 next, and so on. Today, merchandise managers in such cities point with pride to the sale of 100 water heaters. Five thousand per year are the least that will make possible the solution of our present problem. It can be done. To do it, however, requires vastly increased appropriations which will appear out of line with past experience. But, having sold the added load, enforced or voluntary rate reductions will result in so much less loss of net income than that which would have been incurred through the same rate reductions, but without the new load, I do not hesitate to predict that the increased promotional expense will seem small indeed when compared with what the reductions in net income might otherwise have been.

We should make every effort to sell employees on the value of electric service, for if thoroughly convinced to the point of actually using the appliances, they become immediately more valuable in their jobs and hence to their company. The means by which this can be done will differ in various localities due to the dealer situations, but no matter what the limitations, some way can be worked out to supply employees with electrical appliances at fair prices and on reasonable terms.

It would do no harm for each one of us to set aside an individual or a group in our organizations whose duty it would be to acquaint themselves with the new developments so that information can be readily available, and, if need be, campaigns organized to cover carefully selected lists of customers. As an example of what I mean, reference can be made to campaigns on small heating applications commonly known as strip heaters or midget load builders. These activities can be carried on in co-operation with several manufacturers and the results are always uniformly important. Since January 1, 1932, in one large company, approximately 1,600 kw. of load has been obtained with an estimated annual revenue of $75,000. Small as these heating devices are, often only 3 or 4 kw. each, they are not to be overlooked as load builders. Their adaptability makes the number of applications almost limitless.

In conclusion, let us get back to the conundrum which I asked. The question was, "Why don't old ladies like moving pictures?" and the answer is, "Tall ladders make them dizzy!" I am convinced that a number of you still do not see any point in that answer. The reason is that you are assuming that "moving pictures" means "movies," whereas in this instance moving pictures means the moving of a number of pictures from their present places on walls to other places on perhaps other walls. Such relocation of pictures requires the use of ladders and the use of ladders makes old ladies dizzy.

May I leave with you the thought that your sales departments can get the sales of electricity that the industry must have if they are not too greatly hampered by tradition or by preconceived ideas that may have been satisfactory in the past but will not do today. Exactly as many of you associated "moving pictures" with "movies," because this has long been your custom, so many a utility sales department today is hampered by company sales, engineering, operating and accounting practices that long have been sound, indeed still may be, but, in the interest of present greatly enlarged load-building necessity, must be modified if the best over-all good is to result. Remember that our opponents, political and otherwise, are alert, active, vocal and frequently unscrupulous.

Money must be spent; better understanding with customers must be obtained; and, above all, the tremendous value per dollar to the customer of electrical service, together with the smallness of the sums now required in homes for the accomplishment electrically of common household tasks, must be everlastingly and unremittingly repeated in simple terms so that our customers cannot fail to appreciate how greatly it is to their best interests to use ever-increasing quantities of electricity.

Time to Readjust Operations to Present Conditions

Report routine, sizes of line gangs, areas of operating subdivisions can all be rescaled profitably to meet changed activity. The operating organization executive can do much to reduce costs, yet improve service.

By J. L. HECHT
Vice-President in Charge of Operations
Public Service Company of Northern Illinois, Chicago

NATURALLY, one of the most serious organization problems encountered in 1930 was in connection with the engineering and construction forces, which had been developed in keeping with the accustomed program of expanding the property. Fortunately, in our case, we had for upward of 25 years followed the policy of developing our engineering and construction forces chiefly from the operating personnel of the company so that when the business trend reversed it was quite practical to transfer many of the key men in the engineering and construction departments into operating positions and to move back operating men who were junior in the service to less important positions.

I feel that we are now in a situation where we should revert somewhat to the type of organization where versatility and capacity for carrying on various functions must be developed among the individual employees, and it is my opinion that a new generation of broad-gage operating executives to replace the highly specialized, or, as I might say, departmentalized executives, will be eventually one of the good results that will come from the present condition.

Some reports can be eliminated

During times of expansion, in order to facilitate the work for department heads and executives, report systems usually based on routines for the collection of voluminous detailed records naturally expand, sometimes to large proportions. Under conditions such as surround us today, it is more practical and even necessary for department heads and executives to be closer to the work and to have a more intimate personal knowledge of what is going on, but unless a careful review is made of reports they will automatically continue, whether essential or not. Yet, if these routines and reports are too drastically curtailed, we may suffer a loss of the value of much of the previous work and serious interference with the necessary flexibility for making rapid expansion in the future.

Obviously under present operating conditions the large line gang became an unwieldy unit. The situation was found to be ideal for the utilization of small crews consisting principally of two-man gangs placed at strategic points throughout the territory and equipped with 1- or 1½-ton trucks having higher speed and lower operating cost. These small units can take care of most of the current operating work and in addition accomplish a scheduled amount of maintenance and of tree trimming, in order to employ the men and trucks at a high load factor.

To a considerable extent our operating districts or divisions were originally delineated many years ago, based on the distance the line gang could reasonably travel from headquarters and back each day. The potential distance has increased tremendously during the past decade, principally as the result of better communication and much improved transportation induced by the improvement of highways, the advent of the hard road and the marvelous advance of automotive design. By taking advantage of all these, the two-man gangs have become much more mobile units than larger line crews so commonly used in the past. Extending the same line of reasoning to take full advantage of the improvements in communication and transportation along with the changed operating conditions, it became evident that the territorial lines or boundaries, which have been developed originally due to local conditions or to the acquisition of properties in certain groupings, could be considerably enlarged.

Superposed activities curtailed

Many utilities represent the consolidation or acquisition from time to time of several smaller companies into one more or less unified operating company, and many of the activities and situations which existed in the smaller companies have been retained, and to these have been added the complexities of the larger organization. The average utility, then, and I believe Public Service Company of Northern Illinois is probably a typical example, became inherently large and complex in the course of its normal development. The operating executive must be ever on guard to see that the many advantages which accrue to the

large company as compared to the smaller are not offset to some considerable degree by the complexity of operation on a larger scale and by the many collateral activities to which the larger utility usually falls heir. Perhaps one of the main virtues of the smaller operating company was its inherent simplicity, which by its directness of action reacted very strongly to build up customers' good will. The best method of coping with the evolutional complexity of the large organization is through the proper arrangement of, and functioning of, the organization. The company's organization should be developed to the point that the line of authority is direct and simple. Every effort should be made to eliminate those conditions under which responsible executives report to several superiors on different activities, as in attempting to carry out the desires of each, the executive is likely to experience difficulty in taking care of the unco-ordinated assignments, and the actual accomplishments of himself and his staff are thereby considerably lessened.

When action is taken toward expanding sales efforts at a time when most other functions of a utility are being curtailed, care must naturally be taken to avoid demoralizing the organization, for in the very nature of things at a period such as we have been going through employees are suffering along with the other citizens and the morale is at a relatively low ebb. This problem, it is felt, can best be met through efforts tending to create sales consciousness on the part of the entire organization.

Edison Electric Institute Prize Awards of 1934

CHARLES A. COFFIN AWARD "for distinguished contribution to the development of electric light and power for the convenience of the public and the benefit of the industry."

. . . **Awarded to Hartford Electric Light Company**

GEORGE A. HUGHES AWARD "for the greatest contribution to the development of the domestic electric cookery load."

. . . **Awarded to Idaho Power Company**

THOMAS W. MARTIN AWARD "for the greatest contribution to the advancement of rural electrification."

. . . **Awarded to Virginia Electric & Power Company**

H. M. BYLLESBY PRIZES "for the three most meritorious papers showing how to increase the usefulness of the accountant in the electric light and power industry."

. . . **Awarded to H. A. Wardenburg, Commonwealth Edison Company**
A. J. Kieffer, Louisville Gas & Electric Company
A. J. Murphy, Wisconsin Public Service Corporation

B. C. FORBES PRIZE "for the most meritorious paper dealing with the subject of public relations."

. . . **Awarded to George A. Palmer, New England Power Engineering & Service Corporation**

JAMES H. McGRAW PRIZES "for the three most meritorious papers on any engineering or technical subjects relating to the electric light and power industry."

. . . **Awarded to Frank W. Stanford, Union Gas & Electric Company**
"Measures of Operation and Maintenance for Overhead Electric Distribution"
James L. Holton, New York & Queens Electric Light & Power Company
"Engineering Necessary in the Development of an Extensive Low-Voltage Network"
S. O. Schamberger, New York Power & Light Corporation
"Hydro Station Operation With Minimum Loss"

A. J. LINDEMANN PRIZES "for the three most meritorious papers dealing with the advantages of electric cookery for domestic purposes."

. . . **Awarded to Miss Georgiana Linstid, Virginia Electric & Power Company**
Miss Anne Glotzbach, Southern California Edison Company, Ltd.
Miss Mayme W. Miller, Minnesota Power & Light Company

EDISON ELECTRIC INSTITUTE MEDAL "to member company employees who have successfully resuscitated individuals suffering from electric shock by the Schaefer prone-pressure method."

. . . **Awarded to Michael Butchko, Duquesne Light Company**
Henry J. Kells, New York & Queens Electric Light & Power Company
Alexander MacPherson, Bronx Gas & Electric Company
Edward Martin, Northern New York Utilities, Inc.
James A. Rogers, Virginia Electric & Power Company

5,000 Kw.-Hr. per Rural Customer

"Not excessively visionary," contends Chairman Powers of E.E.I.'s rural sales subcommittee, but it will be necessary to

—confine attention to existing customers

—educate the customer in the uses and values of services

—co-operate with dealers

—remember that the farm market is but half of the rural market

—adopt the customer's point of view

By P. H. POWERS
Vice-President West Penn Power Company

OUR industry has long been cognizant of its opportunity and has energetically faced the problems encountered in extending service into rural areas. A firm foundation for future rural electric development has been laid with unusual foresight and thoroughness. Transmission lines extend from generating stations to substations in practically every city, town and village of more than 1,000 population in the United States. From these substations our rural lines radiate. Thus, from a power standpoint, the situation is prepared for the decentralization of industry in whatever direction social or economic influences may lead. We have pioneered the way. The fetters of limited power supply are broken. If society wishes, it may spread out and take its industries away from congested centers. The city can move to the country without becoming a farmer. We have been and will continue to be in the vanguard of any industrial decentralization.

Through the mellowing school of experience there have been developed across this country forms of rates and extension policies especially adapted to the varying rural conditions which exist. Under these rate and extension policies between 300,000 and 350,000 miles of distribution lines have been built. This represents an investment of approximately a half billion dollars. This is eight times the direct appropriation for the T.V.A., three times as much as the estimated cost of Boulder Dam and almost as much as it cost to build the Panama Canal. When you add just about an equal amount estimated to have been spent by the customer in wiring and appliances, this rural electrification business will closely approach a billion-dollar industry.

These rural lines serve about 2¼ million rural customers, of which a third are farmers. In 1923, 177,000, or less than 3 per cent, of all farms used our service. By the end of 1933 this had increased to more than 710,000, or 11⅓ per cent of all the farms in the nation. In no year has there been a decrease. Coupled with this extension of lines into the country and the connection of 2¼ million rural customers there has been an organized program for the extension of facilities and development of uses for rural electric service. Already 227 rural uses for electricity have been listed.

Extent of the job ahead of us

Having pointed with pride to the results and accomplishments of the past decade, I now submit that building lines and writing pamphlets is not rural electrification. Rural electrification means electricity—lots of it—at work for the social and economic advantage of rural people. The economic stability of our industry will be enhanced in just the proportion we are able wisely to evaluate and put into use those applications which contribute most to the advancement of rural well being. The real job of rural electrification still remains to be done. It is tremendous, but it can be done. On the firm foundation that has been laid, we intend to build a superstructure that will make the rural home as modern as any city home and will offer rural industries just as abundant, reliable and cheap electricity as can be obtained on a sound economic basis in any similar territory. This will be our contribution to the task of bringing rural life back into its own.

Approximately one-third of our population is rural, from the standpoint of electric service. In arriving at this figure, we must define "rural" as all users or prospective users of electric service outside of incorporated

communities. When it is remembered that our rural lines serve all comers—farmers, non-farming residents, small industries, rural stores, commercial institutions, churches and schools—and that our costs of service cover all these customers, we realize that we are not only interested in farm service, but in all service in these rural areas. When we take into further account the fact that only one-third of our rural customers are farmers, we must mold our selling program on a broader scale than heretofore, if we are to reach the full possibilities of our market.

The rural home needs every convenience demanded by the urban home. It is not excessively visionary to expect to reach an average use by rural residences of 5,000 kw.-hr. per year, and much sooner than the same levels will be realized among our urban customers. There are approximately 200,000 farms on which water is pumped today for some form of irrigation. We can look forward to an additional 300,000 of our farms using irrigation to a greater or lesser degree. In California, of course, irrigation is well established. The average annual farm use there is between 14,000 and 15,000 kw.-hr. We have similar examples in the rice fields of Louisiana and Arkansas. Small-scale irrigation is now moving eastward at a rapid rate. Intensive cultivation of truck gardens, orchards, and even pastures, is bringing this about. A great potential use of our power is represented by these additional farmers, of which more than half are genuine prospects.

A most successful new use that has hardly been well started is for heating soil in hotbeds and sterilizing soil for similar use. It has been estimated that the potential energy use from this application alone is more than 4,000,000,000 kw.-hr. per year. Another large potential market is represented by milk cooling. Authorities generally agree that whole milk sold in our urban centers should be refrigerated at the point of production—on the farm. This market has only been one-fourth sold and is ripe for expansion.

We have no measure nor statistics with which to make even an intelligent estimate of the annual energy consumption of rural commercial business. However, it is considerable and should increase as rapidly as the corresponding urban uses.

Many more successful uses could be elaborated upon, but the market among present customers is so great that it scarcely permits of definition. All of these uses produce great social and economic advantages to the customer. The only limitations are the customer's ability to pay for what he is convinced he can use to his advantage, and our willingness to use methods now at our disposal for convincing the customer what he *can* use.

Proposed plan of action

A PRESENTATION of the accomplishments of our industry in electrifying rural America, and of the challenge presented by today's opportunities, would be incomplete without a specific recommendation for action. There are five fundamentals which should be kept in mind in considering the immediate approach to this market.

First—Without losing sight of the importance of connecting new customers, let us confine our attention for the present to existing customers. If we can build up their use and make them more satisfied with our service, we will make the task of building future extensions much easier. It goes without saying that you must have reasonably low and promotional type rates to offer these customers.

Second—We must bear in mind the need for customer education in the uses and values of our services. Let me illustrate. There is the case of Farmer Brown, who turns off his Telechron clock every night and makes a 5-cent phone call every morning to get the correct time for starting it again. Then there is Farmer Jones, who denies his wife the use of her washing machine, but permits her to dry the clothes indoors with radiant heaters on rainy days. These are true stories. There are the many guaranteed minimum customers who never use up their minimums and others who drop their use as soon as the minimum terms expire. There are the many who demand service and willingly contract under your rates and guarantees, only to become high rate complainants soon after service is established. Yes, there is an endless educational job before us.

Third—The need for dealer co-operation if we expect to sell our rural market. This requires the full support of manufacturers and jobbers. Brown and Jones go to town on Saturday night. As between your store and that of the pump dealer or the electric dealer or the hardware dealer, your chances are slim of being visited by them. It is also likely they are more personally acquainted with other dealers than with you. Doesn't it seem logical, therefore, that only minor opportunities are offered you for the sale of electrical equipment for rural uses? Doesn't it follow that your greatest opportunity lies in aiding other dealers in intelligently promoting and selling electrical equipment and their uses? You cannot profitably employ house-to-house selling in rural areas, so why not make the best of the opportunity when the country comes to town? Dealer co-operation of this kind has already been successfully tried by a number of our large companies. In adopting any plan of dealer co-operation, we must assume responsibility of increasing the aggressiveness of our dealers as well as coordinating their activities.

Fourth—We should progress from a consideration of the farm market to a consideration of the rural market. When we remember there are twice as many non-farming rural customers as farming, perhaps this market will look much more attractive to us. By the same token, we must not let the agricultural viewpoint predominate in our consideration of rural load building methods.

Fifth—We should consider the customer's point of view. In the past, we have concentrated our rural sales effort on the heavy load builders. This is a natural extension of our urban sales effort rather than the use of sales programs specifically designed for the rural market. I believe we need a new approach to rural sales and should press the sale of our services in the order of their value to the customer rather than their value to us. For example, why should we attempt to sell an electric range in a home that doesn't have running water?

The running water activity

WITH these considerations in mind, I propose a simple and inexpensive procedure which can be made to advance more rapidly the satisfactory use of rural electricity than any single effort we might attempt.

Your rural sales committee reviewed the national market for uses of electric service in rural areas and the progress already made. We have decided to select one universal application and concentrate on its promotion. To tackle one job and do it well. This universal application, understood and desired by our rural customers in every part of the nation, is, simply, *running water*. It needs no explanation to the prospect nor any extensive technical research. Good equipment is available and good distribution is established. There are more than a million prospects representing both the farm and non-farming rural customers.

Pumping domestic water supply may seem to represent a small electric revenue compared to the greater load-building applications. This is true when you take the narrow view and think of the direct revenue only. The same idea was held about the electric washing machine, which we credited with 25 kw.-hr. per year. However, we have found, by comparing the consumption of

similar homes with and without washing machines, that those having washing machines use on the average 125 kw.-hr. more than those without washing machines. The addition of running water is a major advance in the owner's standard of living. It carries with it a greater satisfaction and appreciation of electric service. Higher living standards presuppose more uses of electricity, and certainly accelerate the acquisition of more labor-saving devices and more adequate lighting. Therefore, the addition of a domestic water system should be credited with many times its own direct revenue production.

We found the manufacturers of domestic water systems well organized in an association of their own. Our rural sales committee has combined with them in the formation of an Electric Water Systems Council. A slogan and seal has been adopted by the council. The slogan is "Running Water—Your Family Deserves it." A single, inexpensive, promotional broadside has been prepared, which you are expected to mail or deliver to every one of your customers not now enjoying running water. The manufacturers will supply their dealers with the same broadside, on which space will be provided for reference to the manufacturer's specific product. Dealers may use these to supplement your mailings. The objective is to double the rate of sales of electrically operated water systems within fifteen months.

What Can the Consumer Afford?

"Let us be sensible about it," says Mr. Quinn. "The great services of electricity are limited to a relatively small proportion of American homes because the majority cannot afford to purchase them." So Mr. Quinn shows it to be largely a question of volume for manufacturer and utility if the impasse is to be broken and suggests a national campaign with easy payments on a new basis.

By T. K. QUINN
Vice-President General Electric Company

INHERENTLY the industry is beset by problems of policy. Because of its very nature the industry continually needs more and more friends and greater good-will. Right now we should be busier than ever acquiring them. They are not to be secured on any sound or lasting basis, by verbal defenses or attacks. What is done will always be more eloquent than what is said. Our actions will speak convincingly long after our verbal protests and any breast-beating are forgotten. It is on this viewpoint particularly that I shall attempt to focus your attention.

There are close to 20,000,000 domestic electric customers in this country. One-fourth of them have electric refrigerators. Only one-twentieth of them have electric ranges. Less than one-half of them have washers and vacuum cleaners. A very limited number have water heaters. These figures are repeated so often that they become thoughtlessly mouthed as though they meant nothing. We find ourselves turning carelessly away, half believing that our salvation lies in some other direction. But these wired homes are the select homes of the country. They represent less than 60 per cent of the total number of homes.

It is easy to be content with the really remarkable record of this industry. In ten years the number of persons and firms purchasing light and power almost doubled. But whether we like it or not, that record is not nearly good enough—not in this impatient, fast-moving country. The June bride in a non-electrical home becomes a servant in September and an American woman who washes her own clothes is working like a Chinese coolie for a few cents a day. Two-thirds of the housewives of this country should not still be breaking their backs over old-fashioned washtubs.

Service use brings friendly feelings

The small energy-use customer is a liability directly on the books of the company because the cost of serving him is often greater than the gross payments he makes. But he is a much greater liability as a limited user who does not enjoy the value, usefulness or convenience of the service at his very fingertips. He is a

greater liability as a potential user of the major electrical home servants, who should have them but does not. If he happens to appreciate fully their worth and is still without them, so much the worse.

Everything considered, only one-fourth of the domestic electric customers can be considered real users of today's electrical service, and that one-fourth represents but 15 per cent of all the homes of the country. The other 85 per cent have hardly more reason to be friendly than unfriendly to the industry and they are all voters.

We should do very well to concentrate our attention a while on the 15,000,000 or 75 per cent of the present domestic users who do not have the major appliances they should have in their homes. An industry campaign built around the sales slogan "Sell the Other Three-fourths" would serve to crystallize our activities on the really important work ahead.

Why are the great services of electricity limited to a relatively small proportion of American homes? Let us be sensible about it. The plain, honest answer is that the majority, yes 75 per cent, of the families cannot afford to purchase them. Monthly household incomes of $150, $125, $100 or $75 do not permit the purchase of anything requiring payments of as much as $10 per month which can possibly be avoided.

The prices of energy and of appliances are not too high from the profit and loss standpoint of the producers. But they are too high in relation to the overwhelming minority of the pocketbooks of the country.

Fortunately, there is a way out. The payments per unit of electricity may be lowered easily enough if we can only produce and sell more current. We can sell more current if the payments for current and appliances are lowered.

The payments for appliances may be lowered easily enough if we can only produce and sell more appliances. We can sell more appliances if the payments for current and appliances are lowered.

It is a fairly accurate generalization that after 5,000,000 units of almost any product for the home are sold in this country further sales are not made in appreciable quantities unless the list price is under $100.

As a manufacturer, I am able to tell you today that we can produce suitable refrigerators to list for $80 or less, given mass production on a larger scale than we have heretofore enjoyed. We can produce suitable electric ranges in quantity to list at $75 or less. Other appliance prices either are or can be in proportion.

But this does not finally settle all of the questions. The credit of the mass of customers and their ability to pay are governing considerations.

A new installment sales plan

WE COULD sell an $80 refrigerator over a 36-month period for a little more than $2 a month and sell more of them in the next three years than have been sold in the past fifteen years. We could do so, except for the finance charges, which at prevailing rates, over that period of time, would be positively prohibitive. They would amount to half the price of the refrigerator itself. What makes these charges prohibitive? Is it the cost of money alone? Certainly not. Is it the credit risk? No. Is it repossession expense? Again no. What then is it? Well, it's the booking, billing and collection expense. Remember, it costs just as much to book, bill and collect one dollar as it does $100 or $1,000. The percentage ratio of the cost becomes greater as the amount booked decreases, because the booking, billing and collection cost is practically fixed.

It happens that one of the functions the light and power utility companies are pre-eminently qualified to perform is to book, bill and collect small accounts. They do it efficiently, inexpensively and on a mass scale. The commercial installment credit companies of the country cannot economically handle monthly payments of less than $10. Less than $5 is out of the question. The utility companies, on the other hand, collect monthly payments of as little as $2 or less. Merely to add an item of $2, $3, $4 or $5 to the regular monthly bill would involve a minimum of additional expense. The exorbitant cost of handling small installment payments could be more than cut in half, particularly with the new lower interest rates for money. Utility companies could handle the bookkeeping for every appliance sold on their lines, whoever made the sale. The public would know that an economic saving was thus made possible and would gladly give credit to the utility companies for it. Dealers, distributors and manufacturers would naturally be grateful for this help. Each transaction could be handled up to the point of default or beyond, as might be predetermined. Funds to finance these sales could be advanced by the utility company from its own borrowings. Funds could be secured from finance companies. Funds could in some cases be obtained from the manufacturers of the product. Funds could in perhaps most cases, under proper conditions, be secured through the newly organized Electric Home and Farm Authority, which was launched in part for just this purpose.

Double the domestic load in three years

A national move sponsored by the Edison Electric Institute would popularize the whole program and make clear its purpose and benefits. The result should be to double the present domestic load within three years with strong promotional support. Greater good will would automatically follow. Millions more of American homes could enjoy the help of modern electrical servants. Prices of both appliances and rates for the current to operate them would be less. The industry would automatically secure a favorable public reaction. In short, it seems to be a crucial matter of great ultimate importance.

The plan is not brand new. It has been successfully worked, in somewhat different form, by several companies, with beneficial results. It is an important part of the promotional plans of the Electric Home and Farm Authority in the Tennessee Valley. I commend it to you for universal adoption as a practical means at hand to help meet the competition of the times in a manner not inconsistent with modern methods or out of tune with the competitive practices of the day.

Without some such special effort we seem doomed to slower and less satisfactory progress. The objections and fears we may have about it appear to be outweighed by the many obvious advantages. It is a definite, practical plan which can be adopted almost immediately, promising very much more in concrete results than so many of our broad, high-sounding but less tangible, general programs.

Energy Rates Always Low by Price Level Measure

Prices are rising, perhaps to reach 1929 levels soon again. Taxes are rising. Electric rates have had a consistent downward trend. They have always been less than the value of service. The objective of the industry in the era of price recovery must be to keep that relation for power as well as for the home. So concludes Mr. Newton, who is chairman of E.E.I.'s rate research committee.

By F. A. NEWTON
Commonwealth & Southern Corporation

DO THE facts with respect to the fluctuations of rates and prices support the contention made during the last two years that rates should come down because commodity prices have fallen? What confronts the industry by way of price fluctuation for the immediate future? These are the questions which a complete discussion of rates and prices should attempt to answer.

One of the most important problems which the management of industry must continually meet and solve is the formulation of a sound policy to meet the difficulties raised by fluctuating commodity price levels. The electric utility industry must conduct its business within the framework set by the price system, and it must continually adjust itself to changes within that system.

In the early months of 1932 electric rates for domestic consumers were attacked, as were many other utility rates, on the ground that they had not fallen as much as commodity prices. It was argued that rates should move with the general price level, which had already fallen 30 per cent at that time and was still sinking. Rates had declined less than prices. Domestic rates became the target for people who were anxious to commend themselves to a public whose income had been shrinking rapidly for more than two years. It was asserted that the prices of all things must be adjusted to a lower level; that this was a new economic situation, and that we were on our way to the price levels of the pre-war era. It was assumed as a fundamental principle that rates should follow commodity prices in their fluctuations.

Today that situation has changed radically in one respect at least. The prophecies of the new low economic level of prices, which were so freely made a year or two ago, have no longer any validity. We are headed for higher price levels, and indeed for the restoration of those prices which prevailed in the years before 1929. Yet for the time being the industry is still confronted with an attack upon its rates for domestic use. They are under attack both by acts of regulatory bodies and by threat of competition from federal and municipal governments.

The efforts to raise commodity prices have resulted in an increase since the early months of last year of somewhat more than 20 per cent in wholesale prices. Agricultural commodities have actually risen 50 per cent. This general rise may be expected to continue until prices have once more attained to the level of 1929 at least. In 1926 they were a little higher than in 1929. You are faced with the prospect, then, of conducting the industry in the future under the price conditions which prevailed during those years.

On the side of electric rates to domestic consumers, there has been a decline from 6.33 cents per kilowatt-hour on the average in 1929 to 5.49 cents in 1933. For the current year (1934) domestic rates will be even lower. In fact, at the present moment domestic rates are fully 15 per cent below those of 1929. The effective rates are, however, even lower than this. For rates cannot be discussed intelligently without considering at the same time what has happened with respect to taxes. An increase in rates which was straightway offset by an increase in taxes would be of no benefit to the industry. It would be making it a tax collector in disguise.

What has happened since 1929 is a good example of this. In that year the electric industry sold to domestic consumers 9,772,000,000 kilowatt-hours. For this it received revenue amounting to $618,798,800, or 6.33 cents per kilowatt-hour. In 1933 it furnished 11,960,000,000 kw.-hr. to this class of consumers at an average of 5.49 cents and received a total of $656,570,100.* In

*Edison Electric Institute Statistical Bulletin No. 9, August, 1933, page 3.

short, for the added 2,188,000,000 kw.-hr. it received an additional revenue of $38,000,000.

During the same period the taxes levied upon the industry rose from $187,500,000 to $230,000,000, an increase of $42,500,000. This completely offset the entire gain in revenue from greater volume of domestic sales. The industry would have been just as well off, in fact a little better, if taxes had remained the same and the domestic rates had been reduced by the amount of the tax increase. The added taxes imposed amount to 0.35 cent per kilowatt-hour sold to domestic users. It must be clear that the financial position of the industry would have been the same in 1933 if the rate had been 5.14 cents instead of 5.49 cents for domestic users and if taxes had remained on the 1929 level.

Taxes are seizing the gains

FOR 1934 it is estimated that taxes will reach a figure of $270,000,000. This is $82,500,000 more than in 1929. If domestic sales reach 12,500,000,000 kw.-hr. this increase in taxes amounts to 0.66 of a cent per kilowatt-hour. If taxes had remained on their 1929 level and if the rates were reduced sufficiently to yield $82,500,000 less, the rate per kilowatt-hour for 1934 would be 4.75 cents for domestic users. The companies would be in the same financial position as they are now. They would receive smaller revenue and pay only the taxes which were levied upon them at the peak of prosperity in 1929. It is interesting to note that such a rate (4.75 per kilowatt-hour) would be 25 per cent lower than the 1929 domestic rate of 6.33 cents. The wholesale price level is today only 23 per cent below the level of 1929.

This increase of taxes during the last five years is limited almost solely to the electric utility industry. In the case of the railroads, taxes fell 37 per cent between 1929 and 1933. For the year 1934 the electric utility industry will actually pay a larger sum to the various governments in taxes than will the entire railroad industry. In the field of agriculture the tax on farm property has declined more than 30 per cent since 1929. As against these, this industry will pay taxes in 1934 which are 44 per cent higher than those of 1929.

In this difficult situation it may be helpful to review the history of domestic rates in the electrical industry. For this is not the first time that the industry has been confronted with the problem of fluctuating price levels. The electric utility industry had its practical beginnings in 1882, the year in which President Franklin D. Roosevelt was born. The half century which stretches between that date and the present time has furnished an abundance of price fluctuation, and we may learn something by studying the experience of our industry during this period. Interesting enough is the fact that prices generally stood then almost exactly where they are today.

Back to 1882 price levels now

To put the fluctuations in common-sense terms, a typical group of commodities at wholesale would have cost $108 in 1882†. These could have been bought for $86 in 1896. By 1913 they had risen to $102, and by the spring of 1920 they would have cost more than $240. In the early months of last year their price had dropped to $94, but today is again back to $108. These gyrations are so extreme as to furnish us an ample test of the necessary relation, if any such there be, between electric rates and commodity prices.

The trend of electric rates has been steadily downward throughout the entire period. As near as we can ascertain from such records as are extant, the rates at the beginning were commonly 25 cents per kilowatt-hour. They fell gradually over the first twenty years until in 1902 they stood at 16 cents.

The output in 1902 had amounted to 2,500,000,000 kw.-hr. It doubled during the next five years and then doubled again in another five. By 1917, when the fourth census of electrical industries was taken, the output had multiplied by ten and the 2,500,000,000 kw.-hr. had become twenty-five billion. Commodity prices were rising throughout this entire period. With the push that the war had given them, they were twice as high in 1917 as they had been in 1902.

Despite this increase in the cost of all things which the electrical industries brought, the trend of electric rates was rapidly downward. In 1917 they were less than half as high for domestic users. For they had fallen from the 16 cents in 1902, which enabled them to compete with gas, to 7.5 cents in the intervening fifteen years.‡ Since 1917 they have never risen more than 10 per cent above the rates of that year. In only two years were they higher and by 1920 the average rate for domestic use had returned to its earlier levels, despite the fact that wholesale prices reached their peak.

The years 1910 to 1914—immediately preceding the war—have commonly been used in the discussion of the parity which should be established between agriculture and other prices. With the prices of the years 1910 to 1914 as the base the movements of commodity prices and domestic electric rates have been compared from 1882 to 1934. Today domestic electric rates stand 32 per cent below the level of 1910-1914, the pre-war years. Commodity prices are higher than at that time.

If parity of prices on the basis of the five years 1910 to 1914 were the end to be accomplished, then the electric utility has already reached that end. This is true even as against agricultural products, which form the very storm center of the discussion over commodity prices. They are today 15 per cent below those of the base years, while domestic rates are 32 per cent lower.

No connection between prices and rates

THE facts of prices and domestic rates at once dispose of any historical basis for the assertion that there is any necessary correspondence of movement between them. There was no such correspondence even during the period of war prices.

The most puzzling problem that is raised by a contemplation of these facts is how this industry was able to carry on through the great upheaval of prices which occurred between 1915 and 1920. How did it manage to weather this period of rising expenses which were brought on by the general up-rush of costs? For the electric utility industry alone was receiving lower rates in 1920 than it had in any previous year. All other industries, regulated as well as non-regulated, had marked increases in the prices which they received for their product, and so in their revenues. That this must have

†*Based on index numbers of wholesale prices in U. S., pages 26 and 27, "Prices," by Warren & Parson.*

‡*Edison Electric Institute Bulletin No. 9, August 1933, page 6.*

been so for the unregulated industries is obvious. For the very prices which make up these indexes for commodities were those which these industries received for their products when they sold them.

The railroad industry furnishes the most interesting and illuminating comparison with the electric utility industry throughout this period. Its experience conforms more nearly to the general pattern of expenses and profits which would have been expected to result from the price revolution which the war brought. The railroads of the United States attained their highest pre-war earnings in 1916. In that year their operations, after paying expenses, depreciation and taxes, resulted in a net operating income of $1,040,000,000. During the next four years their rates were raised, until in 1920 freight rates were 49 per cent higher and passenger rates 34 per cent above those of 1916. This increase, coupled with the growth in traffic, added $2,500,000,000 to the gross operating revenues of the railroads. These rose from $3,597,000,000 in 1916 to $6,178,000,000 in 1920.

But the net railway operating income did not advance. It fell from $1,040,000,000 in 1916 to the insignificant sum of $17,000,000 in 1920. In short, their net earnings were wiped out, despite the great augmentation of their gross revenue. Nothing but the government guarantee saved them from wholesale bankruptcy. In 1921 rates rose still higher and were 80 per cent above those of 1916 for freight and 50 per cent for passengers.

As against this experience, the electric utility industry managed to live on its own revenues. While it did not make a fair return upon its property during this period—it fell far short of that goal—it managed to struggle through. A group of nine important operating utility companies show earnings, even in 1920, of 4.3 per cent on their invested capital.

Labor small item of electric cost

Why this difference between the railroads and the electric utilities? A large part of the answer is revealed by a comparison of their expense accounts. In the railroad industry the cost of labor absorbs 40 per cent in normal times of the gross operating revenue. In 1920 the amounts paid to labor had risen to 55 per cent of the gross revenue of the railroads. Despite the increase in freight rates, wage payments outran them by a good distance. These payments more nearly conform to the movements of commodity prices. The fuel and materials used in conducting railway operations ordinarily absorb about 25 per cent of the gross in normal times. In 1920 this had risen above 30 per cent. In ordinary times about

Index Numbers of Average Cost of Electricity for Household Use—Price of Farm Products—All Commodity Prices—Cost of Living—Freight Revenues per Ton-Mile

1910–1914 = 100

Year	(1) Cents per Kw.-Hr.	(2) Cost of Farm Products	(2) Cost of All Commodities	(3) Cost of Living	(4) Revenues Per Ton-Mile
1867	...	...	162	...	259
1868	...	...	158	...	243
1869	...	...	151	...	230
1870	...	...	135	...	254
1871	...	...	130	...	240
1872	...	...	136	...	248
1873	...	...	133	...	217
1874	...	...	126	...	204
1875	...	...	118	...	191
1876	...	...	110	...	164
1877	...	...	106	...	173
1878	...	...	91	...	174
1879	...	...	90	...	155
1880	...	...	100	...	166
1881	...	...	103	...	160
1882	277	99	108	...	148
1883	...	87	101	...	162
1884	...	82	93	...	153
1885	271	72	85	...	136
1886	...	68	82	...	134
1887	...	71	85	...	132
1888	...	75	86	...	126
1889	...	67	81	...	124
1890	255	71	82	78	126
1891	...	76	82	75	120
1892	...	69	76	75	121
1893	...	72	78	74	118
1894	...	63	70	73	116
1895	233	62	71	73	113
1896	221	56	68	74	108
1897	219	60	68	74	107
1898	207	63	71	74	101
1899	189	64	77	76	97
1900	188	71	82	79	98
1901	185	74	81	80	101
1902	179	82	86	83	102
1903	171	78	87	87	103
1904	156	82	87	86	105
1905	138	79	88	86	103
1906	124	80	90	89	101
1907	116	87	95	94	102
1908	112	87	92	90	101
1909	109	98	99	90	103
1910	107	104	103	95	101
1911	104	94	95	98	102
1912	101	102	101	99	100
1913	96	100	102	103	98
1914	92	100	99	104	99
1915	89	100	101	102	99
1916	84	118	125	111	97
1917	83	181	172	134	98
1918	92	208	191	163	116
1919	85	221	202	185	133
1920	83	211	226	214	144
1921	82	124	143	184	174
1922	82	132	147	174	160
1923	80	138	147	178	152
1924	80	140	143	178	152
1925	81	154	151	183	150
1926	78	141	146	182	147
1927	76	139	139	180	147
1928	73	149	141	178	147
1929	70	147	139	178	146
1930	67	124	126	171	144
1931	64	91	107	154	143
1932	62	68	95	139	140
1933	61(a)	72	96	133	..
1934	60(b)	84(b)	107(b)	...	..

(a) November, 1933. (b) April, 1934.

(1) Computations based on data in Statistical Bulletin No. 9, August, 1933, page 6, of the Edison Electric Institute.

(2) Prices by George F. Warren and Frank A. Pearson, pages 26 and 27.

(3) 1890–1920 based upon Cost of Living data of Paul H. Douglas, and from 1921–1933 upon the Cost of Living data published by U. S. Bureau of Labor Statistics.

(4) 1867–1900 from Department of Agriculture Miscellaneous Bulletin No. 15, 1898, page 12. Report by H. T. Newcomb and revised report (1901) page 14, 1921 to 1931 from statistical abstract 1933, page 351.

two-thirds of all the revenue of the railroads goes to pay labor and the materials used in operation. Whenever prices and costs of living rise this brings about a rapid expansion in operating expenses, which naturally results in a corresponding decrease in operating income. In the electric utility industry, on the other hand, the wages and salaries paid to labor are normally only about 20 per cent of the gross received from electric service. Nor do the fuel and other material costs absorb so large a part of the revenues. This is particularly true of hydro-electric plants.

The secret of the matter is that this industry does not create its product and render service so much with labor and material which it buys currently and utilizes. It renders its service more largely with plant. This gives its expenses a certain degree of immunity from sudden changes in prices and the cost of living. This is especially true if the company has surplus plant capacity at the beginning of a period of rising prices. In that case it will make a relatively good showing despite the price advance.

Reductions result from improved technique

BUT these characterstics of the industry make it quite impossible to reduce rates when prices fall, and still maintain earnings which approach a fair return upon the value of the property. The cost of rendering electric service is largely determined by the plant investment, and that cost does not fall merely because the general price level declines.

These facts, which differentiate the electric utility industry from most others, have special bearing upon sound rate-making policy. The continuous decline in domestic electric rates throughout the history of the industry is very largely the result of improvement in the technique of generating, transmitting and distributing energy. If rates are to remain low, and if the service is to improve continuously, an abundant supply of capital must be available for expansion and improvement. The fair rate of return and the establishment of fair values are the crucial factors in electric utility rate making. The cost of labor and materials is of much less consequence here than it is in many other utilities. Given an adequate rate of return, which will enable the industry to command capital freely at all times, the industry can protect the public against the vicissitudes of rapidly rising prices. It did this in the years 1917 to 1920. It is significant that at this time, when various groups are clamoring for increased price levels, the electric utility is not asking for higher rates. But it must, in justice to its management and to the investors who have made the cheap and efficient service of today possible, protest with all vigor against further decreases in rates at a time when all other prices are advancing.

Electric value higher than the price

The depression of the last four years has staged an experiment for us. The incomes of the people have shrunk even more rapidly than rates have fallen. The reduction in personal incomes has been so great that people were compelled to make a re-examination of the importance, or worth to them, of the various commodities and services which they have been in the habit of buying. With a drastic shrinkage in income it became necessary to drop something out of the scale of living. This compelled buyers to choose between the various things they had been in the habit of purchasing and to omit those which were worth least to them, as compared to the price they must pay. The public retained, in its modified and reduced scale of living, those things whose value or significance was greatest in view of their price.

This process of choice, which we are all compelled to make because of the scarcity of income, or purchasing power, is the very essence of economic valuation and the very heart of the problem of economic conduct. The necessity for all valuation arises out of the scarcity of means. It is only when that scarcity forces us to choose between the various things which we desire and upon which we might spend our limited income that we make a definite comparison of the worth of various items and rank one above the other.

Practically every individual and every family has gone through this process during the last four years. The value to them of various items must be judged by their conduct in retaining some and dropping others. When submitted to this test, the conclusion as to the value of electric service is that it was high, as evidenced by the economic conduct of domestic customers. Throughout the period they have increased their consumption of electricity for domestic use at the same time that they were curtailing their purchases of other goods and, let it be noted further, that during the same period of four depression years users of electricity had invested in electrical appliances the tremendous sum of $2,173,000,000.§ This fact, together with the increase in domestic consumption throughout the depression, demonstrates unmistakably the public's measure of the value of electric service in the home.

Power demand charges lowered

In the matter of power rates we are faced with a somewhat different situation. The electric utilities of the country have built up a tremendous power load. That load has made possible, to a large degree, existing low domestic rates. The power load has bettered system load factors. Its great volume has aided materially in reducing unit costs. It has made possible the development of more efficient generating, transmitting and distributing facilities. It has aided greatly in the development of the art, particularly from the engineering and operating standpoints.

During the past four years there has been great pressure to reduce the cost of purchased power to industries. This pressure was due chiefly to two factors—first, the reduced cost of competitive fuels and the lower cost of equipment for isolated plants; second, to the efforts on the part of industrial establishments to reduce their costs of operation.

These reductions in power rates have been effected by reductions in demand charges, by modifications in the methods of applying the demand charges or by reductions in energy charges. Today, generally speaking, power rate schedules are on a lower level than prior to the depression. Even if the power loads of 1928 and 1929 could be restored to the levels then prevailing, the revenue from industrial power would not equal the revenue of those pre-depression years. This is a fact not generally appreciated. It will take materially greater power sales than prevailed before the depression to bring back the industrial power revenues of that period, unless there is a material change in the character of the power load.

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§*"Electrical Merchandising," January, 1934.*

Co-operate With Dealers

A call to arms to apply modern co-ordinated selling to get more business. Case records show how to sell. The industry-wide organization is ready for action. Why not take advantage of marketing opportunities?

By J. E. DAVIDSON
President Nebraska Power Company

THE utility company and the dealer must go hand in hand, reaping not only greater profit to both but also giving greater service to the customer. True, there have been power company executives who have deemed it wise to step out of the merchandising business as merchants and depend solely on their dealers for merchandise sales, aided by active sales promotion on the part of their companies. I cannot indorse this viewpoint. I am still old fashioned enough to believe that power and light companies can, and should, carry on their own merchandising programs, and at the same time co-ordinate their advertising and selling in order to be of utmost assistance to their fellow dealers.

Co-operation and co-ordinated advertising and selling in American industry are not new. We have merely been lagging somewhat in this progressive business procession. Florists, cement manufacturers, orange growers and thirty other industries saw the light of truth many years ago—that the real competitors for business were not those of their own indusry, but of other industries, all fighting for their share of the consumer's dollar.

That's exactly what we must do. The electric company and the electrical dealer are not in competition with each other. They are working toward a common end, in competition with furniture dealers, automobile salesmen, clothiers and every one else who is working—yes, fighting—for his part of the consumer's dollar.

Especially is this true of our industry because our selling of merchandise is only a means to an end: First, that of making electricity a greater servant in the home, thereby eliminating drudgery and making the home a more comfortable and finer place in which to live, and, second, that of creating greater kilowatt-hour consumption, thus adding new revenue to our lines and fulfilling our obligation to the millions of men, women and children who have intrusted us with their savings. Why shouldn't we then do everything within our power to carry on and carry out a broad-visioned dealer co-ordination program?

It has been my contention for many years, and I still persist in that same viewpoint, that our dealers of electrical appliances hold as important a position in our general plan of building greater load as the merchandise departments of our electric companies. Every time we turn the leaf of a calendar new labor-saving and home-comfort appliances make their début — new electrical items that dealers cannot afford to merchandise until a steady demand is created.

Who shall pioneer these new appliances? Who shall introduce these new servants to the home-makers of America? The court gave the answer when it said that our service to our customers goes beyond the end of a copper wire. If this were not true, a great portion of the labor-saving, drudgery-removing, home-comfort appliances in common use today would still be merely novelties or luxuries for the few well-to-do. It was the time, energy and money spent by our industry and also by the manufacturers in pioneering these products that developed the volume and the resultant lower purchasing price, enabling the American home to take full advantage of these humanitarian servants.

Solo pioneering will not do

MOST assuredly we might continue to do a solo pioneering job. But we can do a better service job for our customers and a more efficient merchandising job for our companies by co-operating more effectively with our dealers through demonstrations, home service and co-ordinated selling and advertising programs. This is not just theory, for past experiences, few as they have been since 1927, speak for themselves as to what can be accomplished by co-operation and co-ordinated advertising and selling. These activities during the past seven years developed better dealers and made us better merchants. But this spirit of co-operation went beyond that. It induced furniture stores, musical instrument establishments and department stores to take on established lines of high-grade electrical merchandise. I know of one large department store that recently inaugurated a large electrical appliance department because of the co-

operative interest and stimulation on the part of the power and light company in that particular community. Daily in many ways that department store is adding dollars of increased new load to the lines of that electric company. Who can venture to say that these stores are not partners of the electric light and power company in building greater load?

Not only must we aid these dealer-partners of ours in selling electrical appliances, but in order to make them efficient in merchandising, we must carry our educational policy one step farther. We must generally acquaint them with our electric service story, just as we do our own employees. They should understand our rate structure; they should be able to tell their customers how much electricity will do for so little compensation. Nor would it be stepping beyond the line to acquaint them with some of our apparent engineering and public relation problems.

Dealers should not have a too complicated perspective of our business, but surely they would be more effective salesmen for themselves and for us if they understood our business better. They cannot escape the fact that when they sell electrical appliances, they sell more than steel, wood and wire. They are selling a service, and they should have a general understanding of that service and its problems. Since March of 1933 there have been many so-called "new deals." With enthusiastic dealer-co-operation evolving into a co-ordinated advertising and selling campaign, there is now a "new deal" in electrical merchandising.

Today the wise president of a power company, in reading the balance sheet of his merchandise department, considers that statement only as a part of the sales record. It is, and should be, just a small part of the complete record of electrical merchandise sales—and results in load building. To the total sales sum of the merchandise department of the utility company should be added the aggregate sales of every dealer of electrical appliances in the cities and towns served by that particular power and light company. That composite result tells the real sales story because the merchandise sold by dealers uses kilowatt-hours of electricity too.

Haphazard selling belongs to yesterday. Co-operation alone will not establish new sales records. Once the co-operative relationship is established, an intensive co-ordinated advertising and selling program is essential if our industry is to establish sales records commensurate with the need and size of the industry and if we are to hold our own against the constantly more intelligent and more efficient sales competition of other items and other household goods. Again I say that haphazard selling belongs to yesterday.

Such programs as the Electric Refrigeration Bureau, the Home Lighting activity, the Better Light—Better Sight program, the Electric Table Cookery program and the recently announced Rural Development to Promote Electric Water Systems have created, and are creating, greater kilowatt-hour consumption for our companies. At the same time they have brought about a closer spirit of co-operation and a better understanding on the part of our dealers, and from our customers have won for us the reward not only of greater revenue but an appreciation of a greater service on the part of the humanitarian servant—electricity.

Co-ordinated activity must come

WITH all of this in mind, with all of these co-operative activities producing evidence of increased kilowatt-hour consumption, and big dividends paid on the investment of money, time and energy, isn't it high time to turn again to a nationwide co-ordinated sales activity for the whole industry, for all dealers, for all manufacturers in creating an effective means of increased volume of sales of all electrical appliances, thereby building on a more tremendous scale than ever before in the history of our industry a greater residential kilowatt-hour consumption?

And the very fact that we have carried on these co-operative activities during the past seven years furnishes us the basis for launching the most comprehensive load-building program in the history of our industry. The vehicle I suggest for the carrying on of such a program is complete home electrification, starting with the proper porch lamp, going through the whole house and ending with adequate garage and yard lighting.

Every electrical dealer would be vitally interested in such a nation-wide activity because complete home electrification, carried out on such a broad scale, would build up the unit of sale in major appliances, such as electric ranges, refrigerators, water heaters and other kitchen equipment, attic fans, furnace blowers and air conditioning. Not only would all dealers be interested in such an activity, but so would the various trades, such as wiring, fixtures, cabinets, curtains, furniture, kitchen equipment and so on.

A complete home electrification activity can be presented in such a way that it would be the most colorful and dramatic selling opportunity our industry has ever enjoyed. It would combine labor-saving, comfort, drudgery-removing, health, charm and happiness into such a combined force that it could not help but appeal to every parent in America.

Over a period of 3½ years there have been developed more than five hundred local electric refrigeration bureaus, under able direction, disciplined in organized mass advertising and selling, ready to do another big job. They can, and in my opinion would, enthusiastically support a nation-wide home electrification program, if such an activity carried with it a complete, nationally co-ordinated selling and advertising program, definitely planned and definitely carried out.

The time is opportune for the utilities, the manufacturers, the dealers and the trades to join together in this, the greatest selling opportunity in the history of our industry, and which, in my opinion, could be developed into the greatest co-ordinated selling and advertising promotion.

With our files filled with actual case histories of successful co-ordinated selling, where the whole industry has joined hands, why shouldn't we point toward this method of creating greater kilowatt-hour consumption? I am confident that such co-operation and co-ordination will not be lacking, and I look forward to a renaissance of our industry under leaders who will see in co-ordinated sales effort, nationally and locally, the path which will bring to us all—manufacturer, dealer and utility company—greater prosperity, and to the American public greater comfort, less drudgery and more time for the building of a better home environment.

NEWS OF THE WEEK

Roosevelt Speaks on Hydro Policy

Special message to Congress asks time to complete surveys leading to long-range program. Outline of policies promised before adjournment.

"We should proceed toward a rounded policy of national scope," President Roosevelt told Congress this week in a message dealing with the development and improvement of rivers and water-power resources. The President's message was in response to a joint resolution passed by Congress on February 2 asking for a comprehensive plan for maximum development of flood control, navigation, irrigation and hydro-electric power.

Asking the present Congress to pass no legislation until detailed studies to be undertaken during the next six months are completed, the President promised to forward to the present Congress "a broader outline of national policy in which the subject matter of this message will be presented in conjunction with two other subjects also relating to human welfare and security." What the two other subjects were the President did not state. Mr. Roosevelt promised a more comprehensive plan would be submitted to the next Congress that would outline a course to be "pursued over a long period of years."

Reports of technical subcommittees studying the problems were submitted to the Congress with the presidential message. The reports suggested early consideration be given to six great regional developments, including the Elephant Butte Dam and the Platte River Valley power projects, now under consideration.

T.V.A. Opens Rural Power Program

Contract signed with Alcorn County Power Association provides for co-operative ownership of distribution system. Authority buys Mississippi Power Company properties. Results of Tupelo operation announced.

MARKED by the signing of the first contract between the Tennessee Valley Authority and a county power association, activities of T.V.A. and the Electric Home and Farm Authority concentrated in the past week in Mississippi, Alabama, and Tennessee. T.V.A. power was turned on last week into the recently acquired lines in northern Mississippi and in Athens, Ala. Plans provide for Muscle Shoals power for Amory, Miss., by August 1.

An average rate reduction of 40 per cent and ownership of a debt-free electric distribution system in from eight to ten years for residents of Alcorn County, Miss., was predicted by T.V.A. officials under the terms of a contract signed this week between the authority and the Alcorn County Power Association. Effective immediately, the contract places the Alcorn County Association in business with a system purchased for $114,632.60, serving the entire county, including the city of Corinth. Provision is made for construction of new rural electrification lines by the T.V.A. up to 100 miles of lines. These may be taken over by the association in the same manner as the present property is being acquired, at a total cost not to exceed $125,000.

Lines acquired from Mississippi Power

The property transferred to the association is a part of the city and rural lines acquired last week by the T.V.A. from the Mississippi Power Company. Under option since January the utility's properties in nine Mississippi counties were purchased by T.V.A. for $850,743.

As explained by David E. Lilienthal, T.V.A. director, the Alcorn plan embraced purchase of the electric distribution system in Corinth and the county by the association. All residents of the county are eligible to membership. The association will pay city, county, state and federal taxes in the same manner as private utilities. Members of the association will pay installments according to benefits received, based approximately on the amount of energy used by the member each month. These payments will be made for the purpose of clearing the system of all debt.

Association to sell $100 membership

The association will sell memberships at $100, payable either in cash or $10 down, plus 1 cent per kilowatt-hour for each kilowatt-hour up to 100 kw.-hr. a month, with a minimum monthly membership charge of 25 cents. Membership payments are turned over to T.V.A. in payment for the system.

Revenues of the association must be distributed to pay all operating costs, including taxes and maintenance; to establish a reasonable reserve for new construction and other contingencies; to clear the system of all debt and reduce or eliminate membership installments. Surplus earnings, after the above requirements are met, are to be devoted to further rate reductions and to repay members their original membership investment.

Tupelo results announced

Higher per customer consumption and an increase in meters are claimed as the result of T.V.A. power and rates in Tupelo, Miss. Since T.V.A. power was first delivered to the city on February 7, authority officials claim a 35 per cent increase in kilowatt-hour consumption by homes, and an increase in the number of residential customers connected from 944 on March 1 to 965 on May 1. Additional load increases are expected as the result of the first seventeen days' sales of E.H.F.A. appliances. Sales of 137 refrigerators and 36 ranges in this city of less than 9,000 population were reported by co-operating dealers in the first seventeen days of the E.H.F.A. campaign. Dealers report to the authority as high as 50 per cent of their appliance sales were of standard models rather than T.V.A.-approved equipment.

Appliance activities progress

Appliance activities under the E.H.F.A. program received further impetus during the week. The sales of approved appliances through the retail outlets of the Georgia Power Company, recently halted by an injunction obtained by ten Georgia appliance dealers, got under way last week when Judge Barrett in the Atlanta federal court dismissed the dealers' suit and lifted the injunction. Judge Barrett held that "charges that the T.V.A. had intimidated electric refrigerator manufacturers and coerced power companies in order to bring about the sale of its appliances were not borne out in fact."

•

New York City Adopts Tax of 1½% on Utility Revenues

New York City's tax of 1½ per cent on the gross revenues of public utility companies became law last week. The same tax was previously imposed as an emergency revenue-raising measure in the O'Brien administration. It was resurrected by Mayor LaGuardia as a means of balancing the city's budget. As first proposed the tax was to be at the rate of 1 per cent, but a later aldermanic amendment, approved by both branches of the municipal assembly, made the tax 1½ per cent.

The Board of Aldermen also adopted a resolution directing the Department of Gas, Water and Electric Supply to make a survey for a municipal electric plant to supply power for city purposes. The survey, which must be completed by July 15, will concern itself with the cost of such a plant.

•

Toledo Strike Threat Ended by Compromise

Settlement of disputes between the Toledo Edison Company and union electrical employees, which for a time threatened impairment of the utility's service, was effected this week. An agreement was signed which restores a former wage cut of 20 per cent.

Municipal Plant Tax Upheld in Washington

State Supreme Court ruling holds city-owned utilities must pay state levy on gross revenues. County court decision reversed by higher body's ruling.

Tax on the gross revenues of municipally owned utilities may be levied by the state of Washington. Last week's decision of the state Supreme Court, reversing a county court judgment, ruled that city-owned utilities must pay the tax levied against their gross revenues under the state business tax law.

The business tax law, enacted by the 1933 Legislature at its regular session to raise emergency revenue for the common schools imposed upon municipally owned utilities an excise tax at the same rate as was imposed upon privately owned utilities. The city of Tacoma, joined by Seattle, attacked in the county courts the provision imposing the tax and sought permanently to enjoin the state Tax Commission from enforcing the act against their utilities. The decision of the lower court held the provision applying to municipal utilities to be invalid.

In its ruling the Supreme Court held that the state can tax revenues of municipal utilities either as a temporary or permanent policy. "Whether temporary or as a method to be permanently followed in raising revenue, we consider the act a valid exercise of the taxing power of the Legislature without regard to any existing emergency or the limitation fixed in the court for its operation," the court opinion declared. "Cities can fix rates which patrons must pay, unhampered by any supervision by or control on the part of the state Department of Public Works. The utilities which the cities own and operate belong to their people and are conducted for the benefit of the people and not for profit in the ordinary sense." Tax provided for in the law is 3 per cent on the gross revenues of power and water utilities.

•

New Guinea Hydro Delivered by Plane

For the first time a complete hydro station is being flown by air to the site of its erection, the General Electric Company reports. Four horizontal waterwheel generators, rated at 875 kva. each, together with associated apparatus, have been ordered by Bulolo Gold Dredging, Ltd., operating a placer plant in interior New Guinea. Inaccessible by land or water routes, the equipment must be flown to the camp in freight planes. Dimensions of the generators presented a problem. The largest single pieces of these machines are their stators, which have a net weight of 6,545 lb. Boxed, the stators measure 82x49x97 in. The planes have a load limit of 7,000 lb., their hatchways measuring 140x60 in., with a normal inside height of 70 in. Special skids for the stators will allow them to be loaded into the planes. The generator fields and other apparatus, being readily separated into smaller units of relatively little weight, do not present a problem for the planes.

THE FLEET'S IN

Wide World

Signaling their arrival in New York last week, the U. S. Navy's "battle-wagons" stage a night searchlight drill on the Hudson River. The searchlight display will be a nightly feature of the fleet's stay in New York.

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Railway Motors Group of A.S.A. Expands Scope

Enlargement of the scope of the railway motors sectional committee of the American Standards Association's Electrical Standards Committee has been announced. The former scope provided only for work on the standardization of motors used in the propulsion of railway cars and locomotives, while the proposed scope includes standardization work on all of the rotating electrical equipment. The expansion of the committee's work was made at the request of the American Institute of Electrical Engineers.

•

Grand Coulee Construction Bids to Be Opened June 18

With bids for the construction work for the P.W.A. irrigation dam and hydro-electric station of the Grand Coulee reclamation project to be opened June 18, housing for the 4,000 men and their families who will construct the project is being rapidly set up. Plans for the initial development of the project in the Columbia River Basin, Washington, call for a dam 335 ft. high from bedrock and a power plant with three generating units with an installed capacity of 420,000 hp. Total cost of the project will be around $63,000,000.

•

Additional Cities Reported in Appliances Survey

Preliminary figures for five more of the 63 cities being studied by the electrical equipment division of the Bureau of Foreign and Domestic Commerce were released last week. The survey is based on the department's real property survey. Preliminary data on 26 cities was reproduced in ELECTRICAL WORLD, May 19, page 738. Homes wired for lighting in the South show the usual low percentage, with Jackson, Miss., having only 63.9 per cent of its dwellings using electricity for lighting. Use of electric ranges is greatest in Sacramento, Calif., where 3.9 per cent of the homes cook electrically. It is interesting to note that nearly one of every four homes in Oklahoma City, Okla., has mechanical refrigeration. The figures follow:

City	Total Dwelling Units	Per Cent Using Electricity for Lighting	Per Cent Using Electricity for Cooking	Per Cent Having Mechanical Refrigeration*
Jackson, Miss.	11,422	63.9	0.0	10.1
Austin, Tex.	14,407	78.6	0.3	15.0
Oklahoma City, Okla.	49,714	86.8	0.2	23.7
Topeka, Kan.	19,092	94.7	0.3	16.8
Sacramento, Cal.	36,505	96.3	3.9	17.6

*Mechanical refrigeration also includes gas refrigeration.

Oregon Surveyed for Utility Coverage

89.2% of state's population have electric service available, survey completed by Northwest Electric Light & Power Association shows.

Significant in its bearing on the proposed widespread distribution of Bonneville Dam power, a survey recently completed by the Northwest Electric Light & Power Association shows that electric utility service is available to 89.2 per cent of the total population of the state of Oregon. The survey, conducted by Berkeley Snow, executive secretary of the association, undertook to determine the extent to which utility service is now available to the population of that state, by what private companies and municipal enterprises that service is being furnished, and exactly what territories were being served by those companies.

The survey found 35 private companies, ten municipal enterprises and two small federal power enterprises serving portions of the state. The report of the survey tabulates populations served by each of these 47 enterprises and plots on a map the territory covered by each.

Private plants serve 94% of cities

Ninety-four per cent of the urban population of the state is served by private companies, while government and municipal enterprises serve 5.6 per cent, making a total of 99.6 per cent of the urban population of the state receiving electric service. Private companies serve 71½ per cent of the state's rural population, municipal and governmental enterprises serving 0.97 per cent of the rural population. Reaching this population, the utility enterprises operate 2,050 miles of high-tension transmission and 5,172 miles of distribution lines outside of the corporate limits of towns. Populations to whom service is available reside in an area equivalent to 8 per cent of the state's total area, the survey shows.

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Piedmont Group Studies Rural Electrification

Rural electrification in North Carolina will be studied by a twelve-member committee of engineers, farm leaders, educators, public officials and journalists appointed by the Governor. The committee will make surveys of accomplishments along these lines in other states, as well as in North Carolina. It also will undertake to work out practical plans for the extension of rural electrification. Funds to finance the surveys will be made available by the North Carolina Emergency Relief Administration.

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A.S.A. Extends Study of Power Switchgear

Power switchgear scope of the American Standards Association sectional committee studying that phase of electrical standards has been extended to include a variety of apparatus not previously included. The work formerly covered included only oil circuit breakers, large air circuit breakers, disconnecting and horn gap switches. The new work includes high-voltage fuses (above 750 volts) and the current-limiting resistors used with such fuses, metal-clad switchgear, relays directly associated with power switchgear, network protectors, switchgear assemblies including automatic switchgear and power connectors of the type used with switchgear.

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Northern Illinois P. S. to sell "Package" Range

With a well-organized promotional campaign the Public Service Company of Northern Illinois entered last week into the sale of electric ranges. New rates, with a bottom step of 2 cents, went into effect June 1. The campaign is based on a "package" range, which may be Westinghouse, General Electric or "Hotpoint," as the customer desires, the "package" including installation in the selling price, which is $144.50. Terms are $5 down and $4.10 per month. At the end of the first six months and up to the last day of the next half-year the customer, if not satisfied, may return the range and have the stove it replaced reinstalled. Accrued payments are not rebated, but are considered to be rental during the trial period. The company anticipates that from 1,500 to 2,000 ranges will be sold in 1934.

Wiring for installations is done by local contractors according to a suggested layout, which may be modified by requirements of local codes. Any electrical retailer may sell the "package" range under a dealer profit arrangement with the utility, but the range must be sold installed. It will not be sold simply for delivery. Ranges other than the campaign "package" will be sold on the regular company terms of 24 months, delivered or installed.

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Customers' Refunds

Under the provisions of the Burchill bill, just signed by Governor Lehman, customers may obtain from the state on presentation of proper proof of ownership deposits made with public utility companies.

COMING MEETINGS

Canadian Electrical Association—Annual convention, Seigniory Club, P.Q. (Lucerne-in-Quebec), June 13-15. B. C. Fairchild, 409 Power Building, Montreal, Que.

Public Utilities Advertising Association—Annual convention, New York City, June 17-20. Eric W. Swift, Commonwealth Edison Company, Chicago, Ill.

American Society of Mechanical Engineers—Semi-annual meeting, Denver, Col., June 25-28. Calvin W. Rice, 29 W. 39th St., New York.

American Institute of Electrical Engineers — Summer convention, Hot Springs, Va., June 25-29. H. H. Henline, 33 W. 39th St., New York.

. . . THIS WEEK IN WASHINGTON

Power Commission's survey questionnaire being revised . . . Legal limitations force duplication of survey work . . . 70% of industry have accepted light and power code, Johnson says.

REVISION of the questionnaire for the Federal Power Commission's general survey is in progress following suggestions and criticisms obtained from typical plants. The questionnaire, as originally drafted, was taken by Robert H. Barkley, of the commission's staff, to a number of private and public operators in the East. Various changes were suggested so as to bring the questionnaire as nearly as possible into a form that can be answered most readily.

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The commission is giving active consideration at present to the exact scope which the power and rate surveys are to cover. Each of these surveys will have to be brought within the limits of the available appropriations and within such time limits as will allow results to get promptly to industry. Every effort is being made to avoid the gathering of information that cannot be utilized effectively.

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Legal limitations upon the use by one bureau of information gathered by another bureau is making it necessary for the Federal Power Commission to gather anew much data already in the hands of the Bureau of the Census and of the Federal Trade Commission. Studies of the statutes involved have been made, but it has been decided that the Federal Power Commission must gather its own data.

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Acceptance of the electric light and power code by 70 per cent of the operators was announced by Recovery Administrator Johnson Tuesday.

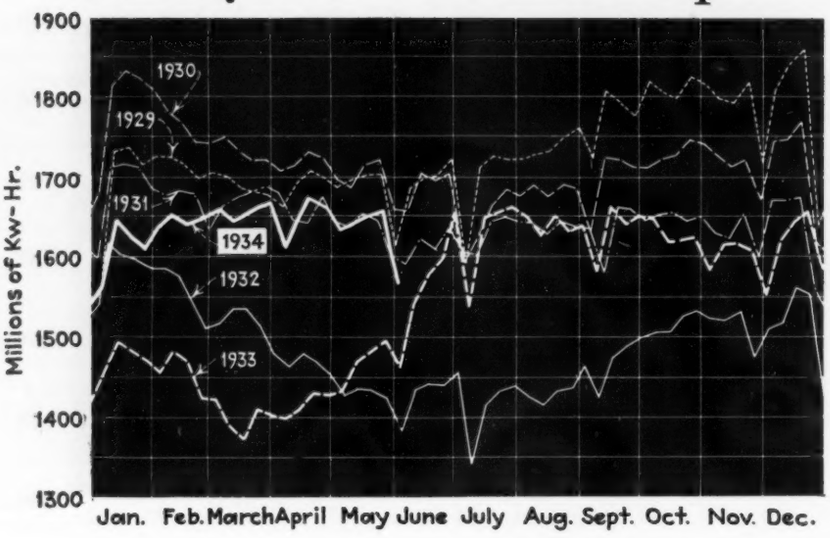
PAUL WOOTON,
Washington Correspondent.

N. Y. Electrical Society Elects Officers for Year

At the annual meeting of the New York Electrical Society, held yesterday on board the S.S. *Conte Di Savoia,* Paul B. Hoeber, publisher, was elected president for the year ending May 31, 1935. Other officers elected were: First vice-president, E. B. Meyer, United Engineers and Constructors, Inc.; second vice-president, R. H. Hughes, New York Telephone Company; treasurer, George F. Fowler, Bell Telephone Laboratories; directors, T. R. Langan, Westinghouse Electric & Manufacturing Company, and J. B. Bassett, General Electric Company.

The elections followed an inspection of the liner by members of the society and a motion-picture demonstration of the gyroscopic stabilization used on the ship.

Holiday Cuts Week's Output



As usual, the week of Memorial Day brought a decrease in central station energy production, carrying it down to 1,575,828,000 kw.-hr., according to the Edison Electric Institute. Compared with the preceding week the reduction was nearly 80,000,000 kw.-hr., the change being about the same as in 1929, but larger than in other years. The gain over 1933 was narrowed to 7.8 per cent, against 10.8 per cent the week before. Production was 2 per cent less than in the corresponding week of 1929.

The excess over 1933 remains highest in the Rocky Mountain region. In general the regional gains over 1933 have recently been shrinking. This was to be expected in the light of rapidly increasing output a year ago. Compared with 1932 the excess has been more nearly constant—around 15 per cent in New England and the Middle Atlantic States, somewhat higher in the Central industrial area and about 7 per cent on the Pacific Coast.

Weekly Output, Millions of Kw.-Hr.

1934	1933	1932
June 2...1,576	June 3...1,461	June 4...1,381
May 26...1,655	May 27...1,494	May 28...1,425
May 19...1,650	May 20...1,483	May 21...1,436
May 12...1,643	May 13...1,468	May 14...1,437
May 5...1,633	May 6...1,436	May 7...1,429

Per Cent Change from Previous Year

Region	Week ended June 2	May 26	May 19
New England	+ 1.9	+ 5.4	+ 8.5
Middle Atlantic	+ 5.6	+ 9.1	+ 8.6
Central Industrial	+10.9	+13.4	+14.6
West Central	+14.0	+11.3	+ 8.8
Southern States	+ 3.2	+ 5.8	+ 5.0
Rocky Mountain	+23.5	+24.0	+21.8
Pacific Coast	+10.2	+15.0	+16.5
United States	+ 7.8	+10.8	+11.2

Claude Finds Rare Gases Raise Lamp Efficiency

An improvement in lamp efficiency of 35 per cent is possible, Prof. Georges Claude, French scientist, reported to the French Academy this week, Paris sources state. He said that he has found an industrial method of producing the rare gases krypton and xenon to supplant argon in light bulbs with a resultant improvement in light output of 35 per cent for the same amount of electric energy.

At first Professor Claude and his associates tried to extract the gases as a by-product of oxygen, but not until ordinary air was "washed" by means of liquid air were sufficient quantities of the gases obtained. He believes that with larger scale operations on large quantities of air sufficient amounts of the gases can be obtained for commercial use.

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British Output Rises

An output increase of 21 per cent was attained during April by the Edmundson group of utilities in Great Britain. April sales totaled 40,618,000 kw.-hr., compared with 33,556,000 kw.-hr. in the same month of 1933. For the first four months of 1934 the total consumption was 186,067,000 kw.-hr. against 155,781,000 in the corresponding period of 1933, an increase of 19 per cent.

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Carrier-Currents Control Hollywood Street Lights

Eighty-eight General Electric carrier-current controllers operating on the 115-volt secondaries of Hollywood's street-lighting system will soon control 10,000 series and multiple lamps for the city of Los Angeles. Motor-alternators of 50 kva. output at Hollywood's No. 6 and 10 distribution substations feed carrier currents of 480 or 720 cycles directly to the station bus. The control energy is stepped down by the distribution transformers to operate tuned control relays. Load circuits are closed on a carrier impulse of sixteen seconds and opened on an impulse of 36 seconds. Operation is automatic from "on" and "off" push buttons.

The transmitters will at first operate over 25 feeders totaling 185,000 ft., and a maze of secondaries radiating from them. The system is designed for an eventual growth up to 50,000 kva. and 32 feeders for each station. The two distribution substations feed the area through 50-cycle feeders rated at 4,600 volts, three phase, three wire with isolated delta.

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April Energy Shows 15 per Cent Rise

United States Geological Survey reports 7,443,120,000 kw.-hr. generated during month. Water power accounts for 47 per cent. Total close to March output.

Public utility plants in the United States generated 15 per cent more energy during April of this year than last. The United States Geological Survey reports the total for the month as 7,443,120,000 kw.-hr., of which 3,487,340,000 kw.-hr., or 47 per cent, was produced from water power. The increase over 1933 matched that of March and exceeded that of February.

The survey report points out that the average daily production of 248,100,000 kw.-hr. during April was only a slight decrease from the revised figure for March of 248,900,000 kw.-hr., whereas the normal decrease from March to April is 1.1 per cent.

Hydro production

Average daily production from water power was 17 per cent larger than in March, and from fuels it was for the second consecutive month 12 per cent less than in the previous month.

On a daily basis bituminous coal consumption was 12.2 per cent less than in March, while anthracite consumption decreased 7.4 per cent. Total consumption of both kinds of coal amounted to 2,390,881 tons against 2,805,378 tons in March.

Regionally the greatest increase in energy production compared with 1933 occurred in the East South Central division, where it amounted to 33 per cent. As the table shows, the gains were large in all except the West Central and South Atlantic divisions.

The survey statistics relate to all public utility plants, including those for light and power, both commercial and municipal electric traction, plants operated by the Bureau of Reclamation and others generating energy for public use.

Region	Per cent change from previous year Feb.	March	April
United States	+12	+15	+15
New England	+22	+24	+19
Middle Atlatic	+14	+12	+15
East No. Central	+20	+28	+20
West No. Central	0	+ 2	+ 4
South Atlantic	— 3	+ 9	+ 7
East So. Central	+28	+23	+33
West So. Central	+ 5	+ 8	+ 8
Mountain	+14	+15	+19
Pacific	+ 7	+10	+13

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Electric Furnaces for U.S.S.R.

Fourteen electric furnaces will be installed in the second section of the Soviet alundum plant, now under construction at Cheliabinsk, in the Urals. Capacity of the furnaces will be 15,000 tons of alundum annually. The plant is expected to be in operation in 1935.

As to Rates

Eastern Shore Public Service Company has filed a new rate schedule with the Maryland Public Service Commission which will effect consumer savings of approximately $45,000 annually. The reduced schedules will be effective after June meter readings, subject to commission approval, in territory served by the Eastern Shore in Wicomico, Dorchester, Worcester, Somerset, Caroline and Queen Anne's counties; areas in and around Crisfield served by the Consumers Public Service Company; in sections of Worcester, Caroline, Queen Anne's and Cecil counties served by the Maryland Light & Power Company, and in that part of Kent county interconnected with the Eastern Shore generating stations at Vienna, Md., and Laurel, Del. Domestic rates are to be reduced from 12 to 10 cents in the first block, and the number of kilowatt-hours per room from 5 to 3; in the second block from 7 to 6 cents, with the kilowatt-hours per room 4 instead of 5. The price in the third block remains unchanged at 3 cents per kilowatt hour. Similar reductions will also be made in commercial, optional domestic and seasonal general lighting rates.

Northwestern Light & Power Company has announced a reduction in rates in all towns of over 700 population in its territory. New schedules call for a 6½ cent rate for the first 30 kilowatt-hours; 5½ for the second 30 kilowatt-hours; 3.7 cents for the next 40 kilowatt-hours, and 2.5 cents for the balance.

Worcester Electric Light Company last week effected a new rate schedule for its 45,000 residential consumers estimated to save users $100,000 annually. The new rates call for elimination of the flat 5 cent per kilowatt-hour rate, for which is substituted a 5 cent rate for the first 50 kilowatt-hours, 4 cents for the next 50 kilowatt-hours and 3 cents for all over 100 kilowatt-hours. The 1 cent penalty charge for unpaid bills is dropped to one-half cent, but there is no change in the minimum charge of 75 cents per month.

Missouri Gas & Electric Service Company has reduced rates in 34 towns in the northwestern and western sections of Missouri, under a schedule filed with the state public service commission last week. The new rates, effective July 1, apply to residential and business service and reduce the present schedules of 9, 8, and 5 cents a kilowatt hour to 8½, 7½ and 3 cents.

Florida Power & Light Company has offered Miami consumers, with reservation, a reduction in the initial rate from 11.4 to 9 cents per kilowatt hour. The proposed reduction is conditional upon the success of present efforts to settle out of court a rate litigation that has been pending for more than a year. The rate case centers around an injunction granted the utility a year ago preventing enforcement of a city rate reduction ordinance which provides for a 33 per cent cut in electric light rates. Other reductions offered by the utility include a new intermediate rate for light consumers using one appliance; extending benefits of the "thrifty three" rate for light, heat and refrigeration to 1,000 small stores, and changing the present "thrifty three" rate to include 30 kilowatt hours of additional service for the same cost. In addition, the company offered to charge the city $10,000 a year less than at present for pumping water at the Hialeah plant, or a reduction of 25 per cent, and to allow installation of 50 per cent more street lights at the present charge of $195,000 a year.

Commonwealth Edison Company has obtained a postponement of action by the Illinois Commerce Commission to force a reduction of lighting rates to June 26. The rate case was previously postponed on petition of the company's attorneys to May 29 (ELECTRICAL WORLD, May 26, page 778).

New York State Electric & Gas Corporation has been ordered by the state Public Service Commission to file a new tariff schedule which shall clearly provide that no increases shall be made in line extension minimums as a result of the discontinuance of any street-lighting contract or agreement and that the superseding tariff schedule be effective not later than November 30, 1934. The commission vacated its order suspending the operation of the company's revised schedule providing for readjustment of minimum charges on rural line extensions, but ordered that the new schedule be filed and effective before November 30. This action was taken as the result of an investigation instituted by the commission into the reasonableness of the revisions proposed by the company.

Public Service Electric & Gas Company will start presentation of its defense against rate cuts on June 26. Petitioners for a reduction in electric rates closed their case last week before the state Public Utilities Commission with a general summary by John L. Bauer, counsel for the petitioners. Mr. Bauer proposed a schedule calling for 5 cents per kilowatt-hour for the first 40 kw.-hr.; 3 cents per kilowatt-hour for the next 60 and 1½ cents for all electricity over 100 kw.-hr. The present schedule is 9 cents per kilowatt-hour for the first 20; 7 cents for the next 20, 6 cents for the next 10 and 3 cents for all over 50 kw.-hr.

Rockland Light & Power Company's success in obtaining a stay of the New York Public Service Commission's temporary rate reduction order, will be carried to the Court of Appeals by the commission. The commission plans to appeal from a decision of the Appellate Division which annulled the proposed reduction and permanently restrained the commission from placing the rates in effect. The commission issued the rate order in March, 1933. First stayed by a Supreme Court order, the Appellate Division, considering the reduction in connection with a certiorari proceedings brought by the utility, annulled the reduction and made the stay permanent. It should be pointed out that the decision of the court in no way affects the recently-enacted law granting the Public Service Commission the right to order temporary rate reductions.

New York Public Service Commission has adopted orders assessing against eight utilities the cost of investigating their rates. The companies involved are the New York Telephone Company, the Westchester Lighting Company, Yonkers Electric Light & Power Company, Brooklyn Borough Gas Company, Kings County Lighting Company, New York and Richmond Gas Company, Western New York Water Company and the Bronx Gas & Electric Company. Investigations into the rates of these companies were ordered recently by the commission, and the commission's orders assessing costs follows from the recent state legislation permitting rate investigations to be charged against the utility concerned. It was indicated that a similar policy will be followed with respect to all rate cases coming before the commission. The orders, effective on and after June 1, provide that "such portion of the compensation and expenses of the commission, its officers, agents and employees, including employees temporarily employed, as is reasonably attributable to such investigation and/or valuation, shall be charged to the company affected." The orders further provide that the commission will render bills to the company for these costs.

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Los Angeles Bureau Has $45,000,000 Budget

Approval of the $45,519,447 budget of the Los Angeles Bureau of Power and Light was granted last week by the Board of Water and Power Commissioners. Included in the budget, which covers the fiscal year from July 1, is an appropriation of $18,945,000 for the city's Boulder Dam transmission line project. Approximately 1,100 men are now employed on the transmission line construction project, according to E. F. Scattergood, chief electrical engineer and general manager of the power bureau.

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N.E.M.A.'s Members Get A.S.A. Facilities

A group membership in the American Standards Association has been taken by the National Electrical Manufacturers Association, the A.S.A. reports. More than 650 company members of N.E.M.A. will benefit from the membership. Plans are being worked out by means of which certain specific A.S.A. services will be available to N.E.M.A. members.

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Uptegraff Moves Plant

R. E. Uptegraff Manufacturing Company, Pittsburgh, manufacturer of high-voltage power transformers, has moved to its new plant at 300 North Lexington Avenue, Pittsburgh. Company officials state that expansion in facilities was necessitated by increased production.

FINANCIAL · · · BUSINESS

Receivers Propose Commonwealths Plan

New corporation to be owned by creditors will acquire securities held by receivers. Hearings to be held on plan June 27.

A new creditor-owned company was proposed by the receivers of the American Commonwealths Power Corporation last week to provide for distribution of the remaining assets of the corporation. Submitted to the Delaware Chancery Court, before which hearings will be held June 27, the plan proposes a new company to acquire the remaining securities still in the receivership estate.

"Since a public sale of the receivership assets will only result in an unnecessary and unwarranted sacrifice, at nominal figures, of miscellaneous securities having real intrinsic and substantial potential values," the receivers' letter to creditors says, "they should be distributed in kind pro rata among the creditors of the company. It will be obvious that a pro rata distribution of the assets in kind is physically impossible and can only be accomplished through the agency of a corporation formed to acquire these assets and whose shares will be distributed by the receivers."

Set-up of corporation outlined

To a Delaware corporation having approximately 210,000 shares of common stock authorized, the receivers plan to assign all assets remaining in their hands at the time of their discharge as receivers to the corporation. In exchange the receivers will take the exact number of shares and stock script certificates of the new company to enable them to issue and distribute to each creditor one share of stock for each $100 of his claim proved against the receivership estate. Approximate stock scrip certificates for fractions of $100 will be issued. Major security holdings of the receivers include 32,500 preference shares of American Gas & Power Corporation, 35,925 common shares of National Gas & Electric Corporation and 7,057 shares of Dominion Gas & Electric common.

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Standard P. & L. Earnings Drop $5,000,000 in 1933

Consolidation gross earnings of the Standard Power & Light Corporation declined in 1933 to $124,082,525, against $131,705,854 in 1932, the corporation's annual report shows. Net earnings for the year were $58,528,988, against $63,335,913. Net income after depreciation and charges dropped sharply to $634,544, against $1,860,323 in the previous year. Dividend accruals on preferred stock of subsidiaries and affiliated companies in excess of current earnings of such companies have been charged to consolidated surplus account to the amount of $2,216,634.

Consolidated surplus at December 31 was $10,039,422, against $13,194,027 at the end of 1932. The consolidated capital surplus account jumped from $829,687 in 1932 to $68,497,170 at the end of 1933. This gives effect to $77,853,581 reduction in stated value of common and preferred stocks of the parent company, transferred to surplus, and to the writing off of $2,043,864 losses on subsidiaries' investments, $333,335 loss on parent company's investments and $7,863,092 charged to surplus as difference between amount charged to capital and cost of cumulative preferred stock of the parent company retired. Current assets were $49,700,200, compared with $45,742,874, and current liabilities stood at $34,906,797, against $36,751,042.

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Claude Neon Loss Mounts

Net loss of Claude Neon Lights, Inc., for 1933 increased to $115,569, as compared with $90,978 for 1932, the company's annual report shows. Current assets at the close of 1933 were $105,837, comparing with $164,555 at the end of 1932. Current liabilities at December 31, 1933, were $139,482, compared with $480,204 at the end of the previous year.

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Central Power Dividends

First dividend payments since July 15, 1933, have been declared by the Central Power Company. Holders of record as of June 30 of the 7 per cent cumulative preferred stock will receive a dividend of 87½ cents a share, and holders of the 6 per cent cumulative preferred will receive 75 cents. Payment will be made on July 16.

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Nevada-California Pays Accumulated Dividends

In addition to dividend of $1 on the 7 per cent cumulative preferred stock for the quarter ended June 30, the Nevada-California Electric Corporation has declared a dividend of $3 on account of accumulated dividends, payable out of surplus on July 2 to stock of record June 9. Dividend accumulations began subsequent to February 1, 1933, when the last full disbursement was made.

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Refrigerator Sales Set Record in April

Sales of household electric refrigerators in the United States in April were the largest in unit volume for a single month in the history of the industry, according to the electric refrigeration bureau of the Edison Electric Institute.

Unit sales during the month totaled 266,264, compared with 151,668 sold in April, 1933. The highest previous sales in a single month were recorded in June, 1933, when 213,420 units were sold, while the previous April record was 156,248, set in 1931. The April sales brought the total for the first four months of the year to 535,583 units, compared with 240,560 sold in the corresponding period of 1933, the industry's record year.

UNCERTAINTY

With hopes for early Congressional adjournment deferred by administration insistence for additional legislation, and with plans for drought relief, the possibility of bonus payment and other inflationary expenditures in the offing, an element of uncertainty clouds the weeks immediately ahead. Reflecting in several instances more than the usual holiday hiatus, current telltales of business volumes exhibit mixed trends.

Energy production showed more than the usual drop for the Decoration Day week. Automobile production and freight loadings, reversing last week's contra-seasonal spurts, dropped sharply. Steel continues its upward rate of production as strike threats grow more ominous and buyers rush the mills with orders. Commodities, again led by wheat, maintain a sustained rise. Security prices advanced as trading volume, after reaching the lowest point in a decade, expanded moderately.

Bondholders Propose Electric P.S. Plan

A reorganization plan proposing the formation of a new corporation was issued this week by the bondholders' reorganization committee of the Electric Public Service Company. Only the holders of fifteen-year 6 per cent secured bonds, series A and B, and first-lien collateral 5½ per cent bonds, series C, will participate in the plan. The new corporation will be organized to acquire all securities of the various subsidiaries which are pledged under the bonds described and which were sold at auction in New York this week.

The reorganization committee of the new company would be empowered to merge or consolidate any or all of the subsidiaries owning properties in Oklahoma and any or all of the properties of the subsidiaries now pledged under the trust indenture securing the bonds, and to adjust the intercompany debts. Holders of series A, B and C bonds would be entitled to receive bonds and common stock of the new company and bond-purchase rights. Capital structure of the new company would consist of $4,041,500 collateral trust series B bonds, not more than $303,112 series A collateral trust bonds, not to exceed 100,415 shares of common stock and common stock purchase warrants for not more than 17,000 shares.

Wagner Electric Cuts Loss for 1933 Operations

Net loss of the Wagner Electric Corporation for 1933 was $66,349, according to its annual report. Loss for 1932 was $181,158. Current assets as of December 31, 1933, stood at $5,332,384 and current liabilities were $289,464, comparing with current assets of $5,257,637 and current liabilities of $178,666 at the close of 1932.

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Industrial Jewel Co. Purchases New Plant

The Industrial Jewel Company, Inc., has acquired larger production quarters in Waltham, Mass. Additional machinery and equipment has been installed and the working force doubled, company officials state. Formerly sold under the brand name "Waltham," the company's products are now being sold under the name "Reliance."

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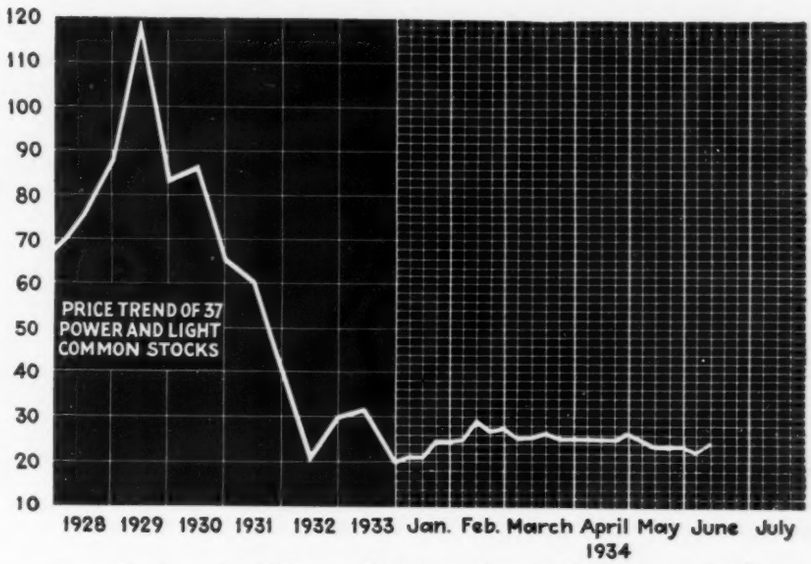
Noma Electric Shows Profit

Net profit of $8,582 for the fiscal year ended February 28, 1934, is shown by the Noma Electric Company. This compares with a net loss of $250,620 in the preceding year. The profit, calculated after depreciation, amortization and income taxes, is equivalent to 4 cents a share on 221,532 no-par shares of capital stock.

Utility Stocks Show Strength



Emerging from the doldrums which have characterized the past month's security trading, utility stocks moved upward. *Electrical World* index this week 24.3; last week 23.0.

Winnipeg Electric Co. to Pay Bond Interest

Interest due since April 1 on the 5 per cent refunding mortgage stock and 6 per cent refunding mortgage bonds of the Winnipeg Electric Company will be paid at once. Payment of the semi-annual interest on the mortgage stock will be made by the British Empire Trust Company, London. Coupons on the 6 per cent bonds will be paid on presentation at the Bank of Montreal, in Winnipeg, Toronto, Montreal, or its New York agency. Payment on the October, 1933, interest, also deferred, was made recently.

Current Earnings Reports of Electric Light and Power Companies

Operating Companies

	1934	1933	Per Cent Increase	Operating Ratio 1934	Operating Ratio 1933
Detroit Edison (Year ended April 30)					
Gross earnings	$43,227,677	$41,768,557	3.5	68	71
Net earnings	13,902,467	11,968,788	16.1		
Net balance	7,229,238	5,457,408	32.4		
Duquesne Light (Year ended March 31)					
Gross earnings	24,394,368	24,354,755	0.1	45	44
Net earnings	13,334,056	13,627,820	— 2.1		
Net balance	9,334,981	9,745,490	— 4.2		
Florida Power & Light (Year ended April 30)					
Gross earnings	9,909,604	9,937,918	— 0.3	60	53
Net earnings	4,002,493	4,713,633	—15.1		
Net balance	1,019,684*	216,516*	.....		
Houston Lighting & Power (Year ended April 30)					
Gross earnings	7,967,439	7,788,100	2.3	54	53
Net earnings	3,646,233	3,666,061	— 0.5		
Net balance	1,960,897	1,976,879	— 0.8		
Montana Power (Year ended April 30)					
Gross earnings	9,108,084	8,012,565	14.0	57	52
Net earnings	3,913,677	3,831,458	2.1		
Net balance	487,901	632,466	—22.8		
New Orleans Public Service (Year ended March 31)					
Gross earnings	14,897,164	15,342,150	— 2.9	77	74
Net earnings	3,450,887	3,959,098	—12.8		
Net balance	12,594*	469,184	.....		
Pennsylvania Power & Light (Year ended April 30)					
Gross earnings	33,294,967	32,774,486	2.0	55	53
Net earnings	15,096,644	15,424,047	— 2.1		
Net balance	5,439,979	5,848,673	— 7.0		
Texas Power & Light (Year ended April 30)					
Gross earnings	9,244,984	8,979,304	3.0	51	50
Net earnings	4,495,476	4,429,459	1.5		
Net balance	1,146,240	1,123,938	2.0		
Union Electric Light & Power (Year ended March 31)					
Gross earnings	26,483,231	27,253,559	— 2.8	57	55
Net earnings	11,016,119	12,383,443	—10.6		
Net balance	4,120,099	5,266,577	—21.7		
Utah Power & Light (Year ended March 31)					
Gross earnings	8,731,145	9,297,670	.....	59	53
Net earnings	3,567,964	4,420,173	.....		
Net balance	1,083,553*	247,309*	.....		
Washington Water Power (Year ended April 30)					
Gross earnings	7,411,963	7,450,811	— 1.0	60	57
Net earnings	2,907,718	3,221,406	— 9.7		
Net balance	1,201,604	1,531,468	—22.0		

Holding Companies

	1934	1933	Per Cent Increase	Operating Ratio 1934	Operating Ratio 1933
American Power & Light and subsidiaries (Year ended February 28)					
Gross earnings	$72,978,044	$74,531,491	— 2.1	58	54
Net balance	3,624,442	7,451,564	—51.2		
American Water Works & Electric and subsidiaries (Year ended April 30)					
Gross earnings	44,176,008	41,612,533	6.1	55	55
Net balance	2,497,428	1,627,020	53.7		
Commonwealth & Southern and subsidiaries (Year ended April 30)					
Gross earnings	111,906,157	109,266,868	2.4	56	55
Net balance	268,985	615,149	—56.2		
National Power & Light and subsidiaries (Year ended February 28)					
Gross earnings	68,866,829	70,250,934	— 1.9	61	60
Net balance	6,513,730	8,070,947	—19.2		
Philadelphia Company and subsidiaries (Year ended March 31)					
Gross earnings	46,628,288	46,842,812	— 0.4	64	63
Net balance	1,166,746*	2,378,241*	.....		

*Deficit.

Gross earnings—(Operating Companies) Gross operating revenue. (Holding Companies) Gross operating revenue plus other income. Net earnings—Earnings after deduction from gross earnings of operating expenses taken to include taxes, depreciation, maintenance, operating, etc. Net balance—Balance available from income for common stock dividends.

Foreign Trade Slender in Generating Equipment

Shipments abroad of generators and related equipment during 1933 amounted to $2,553,687. These are listed by countries in a report issued by the Electrical Equipment Division of the Bureau of Foreign and Domestic Commerce, which shows the following totals:

1. Direct-current generators	$ 61,859
2. A.-c. generators, under 2,000 kva.	79,762
3. A.-c. generators, 2,000 kva. and over	325,958
4. Steam turbo-generator sets	745,926
5. Accessories and parts for generators	209,689
6 Self-contained lighting outfits.	136,991
7. Double-current and motor-generators, synchronous and other converters	159,151
8. Starting, lighting and ignition equipment	834,351
Total	$2,553,687

Split up among 123 countries, most of the quantities are almost insignificantly small. Argentina leads, with about $770,000. Canada took $200,000. Excepting one unit at $158,484 to Spain, little was sent to Europe.

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Electric Trucks Moving

Sales of electrical trucks and tractors are responding to increased activity in industrial plants. According to an announcement by the Bureau of the Census, summarizing reports by ten leading manufacturers, April shipments were the largest for any month in several years. Against a monthly average of about 20 during 1932, they numbered 72. The rise began early in 1933, suffered a setback in March and April of that year and was then resumed. Comparative figures for domestic shipments and orders follow:

Period	Shipments	New Orders
April, 1934	71	82
March, 1934	64	61
April, 1933	11	15
April, 1932	17	12
First four months		
1934	223	254
1933	97	99
1932	92	61

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Westinghouse Reports Increased Lighting Sales

April saw the largest volume of business written since January, 1931, the Cleveland lighting headquarters of the Westinghouse Electric & Manufacturing Company reports. "Lighting business is definitely on the up-grade," states L. A. S. Wood, Westinghouse lighting sales manager. "The necessity for improved illumination is being recognized more and more throughout the country and orders for new equipment have therefore been received in greater numbers. Stimulated by the Better Light, Better Sight activity of the Edison Electric Institute, people have learned the value of adequate lighting."

New York Metal Prices

	May 29, 1934 Cents per Pound	June 5, 1934 Cents per Pound
Copper, electrolytic	8.50*	8.50*
Lead, Am. S. & R. price	4.00	4.00
Antimony	8.25	8.25
Nickel ingot	35.00	35.00
Zinc, spot	4.65	4.60
Tin Straits	53.15	51.50
Aluminum, 99 per cent.	23.30	23.30

*Blue Eagle

SALES OPPORTUNITIES IN NEW CONSTRUCTION

Spot coverage of the week. Projects approved and proposed, bids requested, equipment wanted, funds available. Prospects for the electrical manufacturer.

Chillicothe, Ohio — Southern Ohio Electric Company has authorized extensions and improvements in local power substation, foot of Chestnut Street, including installation of new equipment.

Sac City, Iowa—Iowa Public Service Company, Sioux City, plans new transmission line in portion of Sac County. Application made for permission.

Hastings, Neb.—City asks bids until June 18 for equipment for city-owned electric light and power plant, including boiler unit, superheater, economizer, air preheater, mechanical draft fans, feedwater regulator, instruments, etc., and one 25-ton overhead crane.

Fleetwood, Pa.—Plans early construction of city-owned electric light and power plant and transmission lines. Estimated cost $110,000. Bond issue authorized.

Lackawanna, N. Y. — Spring Perch Company plans installation of motors and controls, conveyors and other equipment in connection with rebuilding of automobile spring manufacturing works, recently destroyed by fire. Cost over $100,000.

Troy, Ohio—Soon takes bids for new 2,500-kw. turbo-generator unit with accessories for city-owned electric light and power station, to replace present turbine.

Detroit, Mich.—Independent Brewing Company has approved plans for new plant, comprising six single and multi-story buildings, with power house. Cost over $200,000.

Denver, Colo.—Bureau of Reclamation asks bids until June 18 for eleven electric traveling cranes, two jib cranes, two monorail hoists, two stationary hoists (Specification 571).

Asheville, N. C. — Plans ornamental street-lighting system on Broadway, Biltmore and Merrion Avenues.

Upland, Calif. — Upland Lemon Growers' Association plans installation of motors and controls, conveyors, loaders and other equipment in new packing plant. Cost about $100,000.

Benson, Minn.—Asks bids until June 15 for water-tube boiler, stoker, superheater, pumps, coal-handling equipment, etc., for city-owned electric light and power plant. Fund of $50,000 available.

Goose Creek, Tex.—Has engaged Inland Engineering Company, Dallas, Tex., consulting engineer, to make surveys and estimates of cost for new city-owned electric light and power plant.

Cincinnati, Ohio — Globe Chemical Company, St. Bernard, near Cincinnati, plans installation of motors and controls, regulators, conveyors and other power equipment in group of six new plant buildings. Cost over $85,000.

Atascadero, Calif.—Atascadero Mining Company, W. E. Hanson, secretary-treasurer, plans installation of heavy-duty motors and controls, electric hoists, conveyors, loaders and other equipment at local Vanderbilt Mines. Financing for $200,000 is being arranged, majority of fund to be used for purpose noted.

Council Bluffs, Iowa—Citizens' Power & Light Company plans new transmission lines in portion of Pottawattamie County.

Thomaston, Ga.—Thomaston Bleachery plans installation of motors and controls, conveyors and other equipment in new multi-story addition to textile bleaching plant. Cost over $65,000.

Cleveland, Ohio—Cleveland Railway Company plans early call for bids for new power substation. Cost about $50,000.

Charleston, W. Va. — Kanawha Byproducts Coal Company plans installation of motors and controls, hoists, conveyors and other equipment for new coal tipple on Kanawha River. Application has been made for permission. Cost about $50,000.

Binghamton, N. Y.—New York State Electric Company plans extensions in electric distributing system in city district and nearby communities. Cost about $35,000.

Uniontown, Pa. — Uniontown Distilling Syndicate, operating Uniontown Distillery, will make extensions and improvements, with installation of new equipment. Financing for $80,000 has been authorized.

Pierre, S. D.—State Director of Purchases and Printing asks bids until June 19 for quantity of electrical supplies and equipment.

Kingsburg, Calif. — Sidney Johnson, Kingsburg, is at head of project to construct and operate new local multi-unit winery, including power plant. Cost over $200,000. Company will be organized to carry out program.

Dubuque, Iowa — Municipal Dock Commission plans installation of electric hoists, cranes, conveyors, loaders, etc., in connection with addition to city coal dock. Cost about $150,000.

Indianapolis, Ind. — Richard Lieber Brewing Company plans extensions and improvements in plant, including installation of new equipment. Cost over $80,000.

Dover, Ohio—Plans new addition to city-owned electric light and power plant, with installation of new equipment. Fund of $120,000 is being arranged.

Chicago, Ill.—Sherwin-Williams Paint Company plans installation of motors and controls, conveyors, etc., in new multi-story factory addition. Cost about $65,000.